NUS CORPORATION
A Halliburton Company

FILE COPY

02-8703-37-PA

POTENTIAL HAZARDOUS WASTE SITE

PRELIMINARY ASSESSMENT

COMPLETED

TRW/JH Williams Division
Site Name

NYD051814077
EPA Site ID Number

400 Vulcan Street
Buffalo, New York
Address

02-8703-37
TDD Number

Date of Site Visit: 3/25/87

SITE DESCRIPTION

JH Williams Division of TRW Inc. is an inactive steel mill which used to manufacture tools. As a result of the cyanide plating processes, cyanide and a heavy metals sludge were found, at one time, to be entering the city sewer system. Since the mill closed in 1985, the New York Department of Environmental Conservation and the Buffalo Sewer Authority are certain there is no longer any trace of cyanide or heavy metals in the sewer water. However, many metals were settled into underground tanks located on site. The mill is located across the street from a housing district and one mile east of the Niagara River.

PRIORITY FOR FURTHER ACTION: High ___ Medium ___ Low X

RECOMMENDATIONS

A site inspection is recommended on a time available basis only. The underground storage tanks and the close proximity to the Niagara River, warrant sampling of soil and any surface water on site. Also surface water and sediment sampling of all the storm drains in the area should be conducted for possible contamination.

Prepared by: Randy Rice
of NUS Corporation

Date: 06/19/87

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D051814077

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)
TRW/JH Williams Division

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
400 Vulcan Street

03 CITY
Buffalo

04 STATE | 05 ZIP CODE | 06 COUNTY | 07 COUNTY CODE | 08 CONG DIST.
NY | 14207 | Erie | 029 | 37

09 COORDINATES
LATITUDE: 42° 57' 53". N
LONGITUDE: 078° 54' 01". W

10 DIRECTIONS TO SITE (Starting from nearest public road)

Interstate 90 west to Interstate 290 north to Interstate 190 south. Travel ½ mile to Kenmore Avenue exit. Turn left onto Kenmore Avenue. Travel one mile to Vulcan Street. Turn right onto Vulcan. Site on right.

III. RESPONSIBLE PARTIES

01 OWNER (if known)
TRW Inc.

02 STREET (Business, mailing, residential)
Ohio Avenue

03 CITY
Buffalo

04 STATE | 05 ZIP CODE | 06 TELEPHONE NUMBER
NY | 14203 | (716) unlisted

07 OPERATOR (if known and different from owner)
JH William Division

08 STREET (Business, mailing, residential)
400 Vulcan Street

09 CITY
Buffalo

10 STATE | 11 ZIP CODE | 12 TELEPHONE NUMBER
NY | 14207 | (716) 875-3200

13 TYPE OF OWNERSHIP (Check one)
X A. PRIVATE ___ B. FEDERAL: _____ (Agency name) ___ C. STATE ___ D. COUNTY ___ E. MUNICIPAL
___ F. OTHER: _____ (Specify) ___ G. UNKNOWN

14. OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

___ A. RCRA 3001 DATE RECEIVED: / / ___ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: / /
X C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
X YES DATE: 10 / 16 / 78
___ NO

BY (Check all that apply)
___ A. EPA ___ B. EPA CONTRACTOR ___ C. STATE ___ D. OTHER CONTRACTOR
___ E. LOCAL HEALTH OFFICIAL X F. OTHER: Interagency Task Force (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)
___ A. ACTIVE X B. INACTIVE ___ C. UNKNOWN

03 YEARS OF OPERATION
June 1, 1914 (BEGINNING) / 1985 (ENDING) ___ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Cyanide and heavy metals sludge were found in the city sewer system. Further contamination by these solids may be present in the soil on site.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

There is a potential hazard to the environment and population. The Niagara River is located one mile west of the site. This river is the main drinking source for Erie County. There is also a playground across the street from the site.

IV. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

___ A. HIGH (Inspection required promptly) ___ B. MEDIUM (Inspection required) X C. LOW (Inspection on time available basis) ___ D. NONE (No further action needed. complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Diana Messina	U.S. EPA, Region 2	(201) 321-6776

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Randy Rice	EPA	FIT 2	(201) 225-6160	06 / 19 / 87

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

1. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D051314077

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- X A. SOLID
- _ B. POWDER, FINES
- X C. SLUDGE
- X E. SLURRY
- X F. LIQUID
- X G. GAS
- _ D. OTHER: _____ (Specify)

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS _____
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- X A. TOXIC
- X B. CORROSIVE
- _ C. RADIOACTIVE
- _ D. PERSISTENT
- X E. SOLUBLE
- _ F. INFECTIOUS
- X G. FLAMMABLE
- _ H. IGNITABLE
- _ I. HIGHLY VOLATILE
- _ J. EXPLOSIVE
- X K. REACTIVE
- _ L. INCOMPATIBLE
- _ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	50,000	gallons	Contains heavy metals and large quantities of water.
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS	Unknown		cyanide solution
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	Unknown		Sludge composition

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
IOC	Cyanide	57125	underground tanks	176	
MES	Nickel	7440-02-0	underground tanks	9347.0	ppm
MES	Arsenic	7440-38-2	underground tanks	0.21	mg/l
MES	Barium	7440-39-3	underground tanks	5.1	mg/l
MES	Cadmium	7440-43-9	underground tanks	0.008	mg/l
MES	chromium	7440-47-3	underground tanks	0.018	mg/l
MES	Lead	7439-92-1	underground tanks	0.001	mg/l
MES	Mercury	7439-97-6	underground tanks	0.0002	mg/l
MES	Nickel	7440-02-0	underground tanks	458.0	mg/l
MES	Selenium	7782-49-2	underground tanks	0.002	mg/l
MES	Silver	7440-22-4	underground tanks	0.001	mg/l

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (See specific references, e.g., state files, sample analysis, reports)

Interagency Task Force on Hazardous Wastes Report, Niagara Falls, New York, Octover 13, 1978.
NYDEC Hazardous Waste Survey, Albany, New York, October 21, 1976.
Telecon note between Randy Rice and Jim Caruso, Buffalo Sewer Authority, May 20, 1987.
Dangerous Properties of Industrial Materials, SAX, 1985.
Pit Sludge Technical Report, Termini Associates, June 27, 1985.

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 _ A. GROUNDWATER CONTAMINATION 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

There is no potential for groundwater contamination. There are no aquifers used for drinking water purposes within three miles of the site.

01 X B. SURFACE WATER CONTAMINATION 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 111,881 04 NARRATIVE DESCRIPTION

There is potential for surface water contamination. The Niagara River is located one mile west of the site.

01 X C. CONTAMINATION OF AIR 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 214,674 04 NARRATIVE DESCRIPTION

There is potential for air contamination. Traces of cyanide may still be present in the soil. If activated by hydrogen, the two elements could release hydrogen cyanide, a toxic gas.

01 X D. FIRE/EXPLOSIVE CONDITIONS 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 51,289 04 NARRATIVE DESCRIPTION

There is potential for fire/explosive conditions. The possible remains of cyanide, which was used and dumped, produces flammable vapors when in contact with water, steam or acids.

01 X E. DIRECT CONTACT 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 9,110 04 NARRATIVE DESCRIPTION

There is potential for direct contact. Possible metals and cyanide may still exist in the soil on site. A playground is located across the street surrounded by a nearby housing district.

01 X F. CONTAMINATION OF SOIL 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
03 AREA POTENTIALLY AFFECTED: 160 (ACRES) 04 NARRATIVE DESCRIPTION

There is potential for soil contamination. Underground tanks, located on site, were used to store heavy metal sludges and possibly cyanide.

01 X G. DRINKING WATER CONTAMINATION 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 111,881 04 NARRATIVE DESCRIPTION

There is potential for drinking water contamination. The intake of drinking water for Tonawanda is located on the Niagara River at a point one mile downstream from possible surface water contamination.

01 _ H. WORKER EXPOSURE/INJURY 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

There was no worker exposure or injury reported during the active operation of this mill. There is no current potential for worker exposure/injury due to the mill being closed since 1985.

01 X I. POPULATION EXPOSURE/INJURY 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 111,881 04 NARRATIVE DESCRIPTION

There is potential for population exposure/injury. Possible metals and cyanide may still exist in the soil on site. A playground is located across the street surrounded by a nearby housing district.

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 _ J. DAMAGE TO FLORA — 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

There is no potential for damage to flora. The site does not lend itself to vegetation, sparse nor otherwise.

01 X K. DAMAGE TO FAUNA — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

There is potential for damage to fauna. The bird population could be affected by any potential soil or surface water contamination.

01 X L. CONTAMINATION OF FOOD CHAIN — 02 _ OBSERVED (DATE: _____) _ POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

There is no real potential for food chain contamination. This is an urban area of domestic animals and no natural food sources.

01 X M. UNSTABLE CONTAINMENT OF WASTES — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: 9,110 — 04 NARRATIVE DESCRIPTION

There is potential for unstable containment of wastes. Any potential contaminants could easily migrate via rainfall runoff.

01 X N. DAMAGE TO OFFSITE PROPERTY — 02 X OBSERVED (DATE: 1983) _ POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

According to the Buffalo Sewer Authority , there had been damage to off-site property. Cyanide and heavy metal sludge was disposed into the city sewer system. The drains became contaminated and were replaced. There is potential for reoccurrence from any remaining soil contaminants.

01 X O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 X OBSERVED (DATE: 1983) _ POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

According to the Buffalo Sewer Authority, there had been storm drain contamination on Vulcan Street. Cyanide and heavy metal sludge were discharged into the city sewer system. There is still further potential for contamination from migration of possible soil contaminants via rainfall runoff.

01 X P. ILLEGAL/UNAUTHORIZED DUMPING — 02 X OBSERVED (DATE: 1983) _ POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

According to the Buffalo Sewer Authority, there was illegal and unauthorized dumping of cyanide and heavy metal sludge into the city sewer system. There is no potential for illegal dumping onto the site itself. The property is secured by fencing and locked gates.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

No other known potential or alleged hazards.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 214,674

IV. COMMENTS

No information available from any source in regards to the types of metals which make up the "heavy metal sludge." Photographs taken at the time of the off-site reconnaissance were of an incorrect location and not of the proper site. Therefore, no photographs are available.

V. SOURCES OF INFORMATION (Cite specific references. e.g., state files, sample analysis, reports)

Off-site Reconnaissance by Michael Bauman and Dan deBruijn, NUS Corp., March 25, 1987.
Interagency Task Force on Hazardous Wastes Report, Niagara Falls, New York, October 13, 1978.

APPENDIX A

MAPS

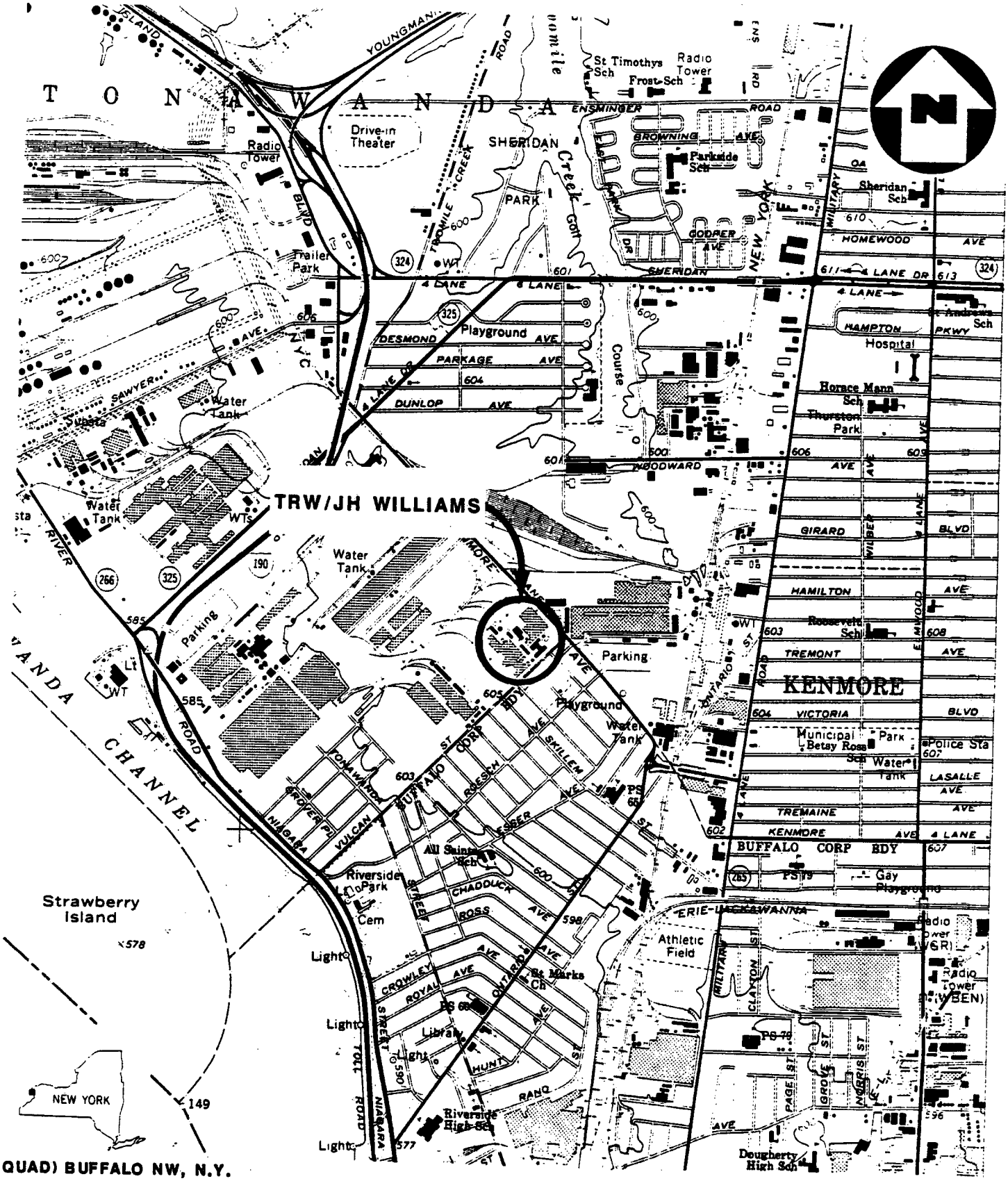


FIGURE 1

SITE LOCATION MAP

TRW/JH WILLIAMS, BUFFALO, N.Y.

SCALE: 1" = 2000'

NUS CORPORATION

A Halliburton Company

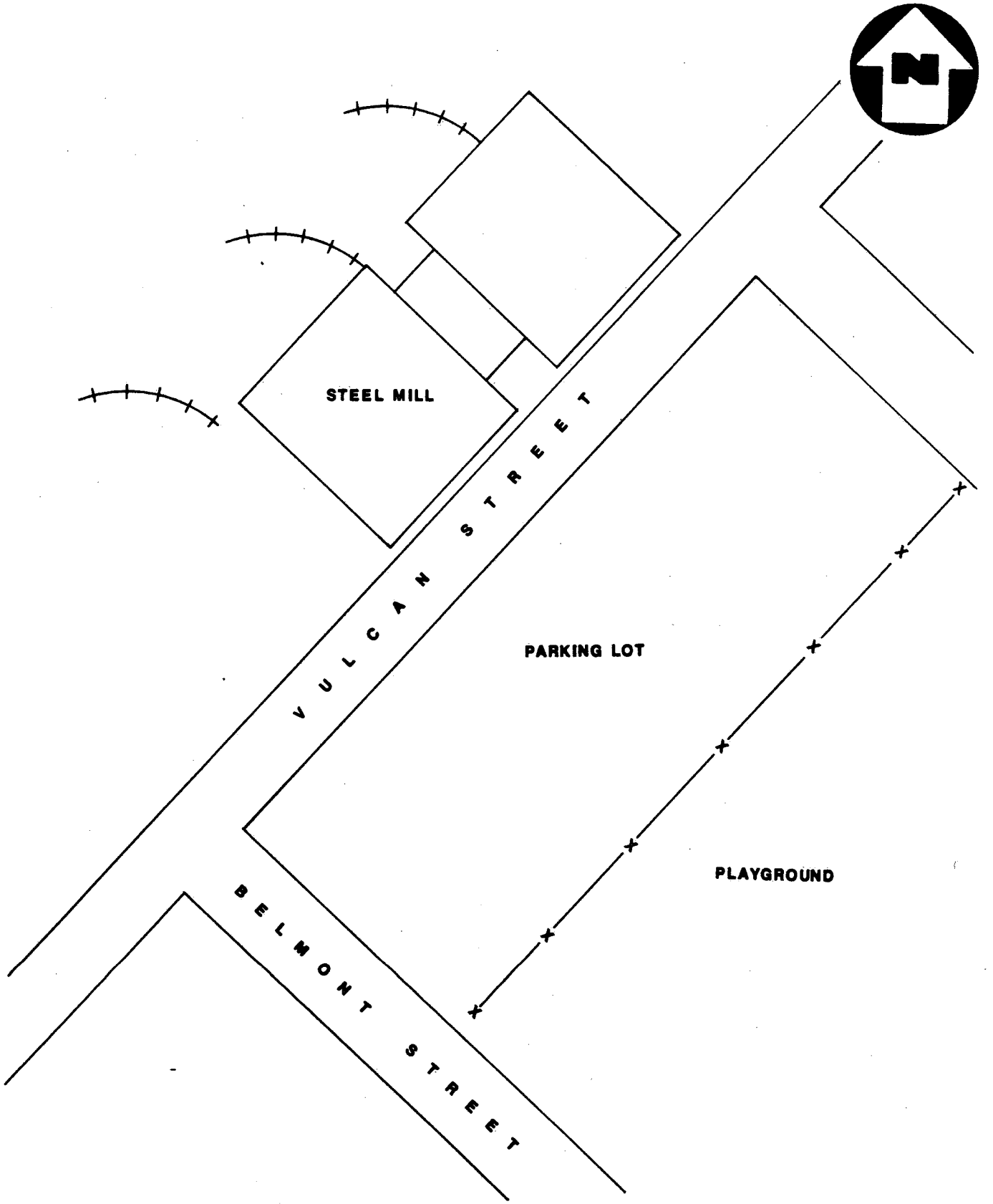


FIGURE 2

SITE MAP

TRW/JH WILLIAMS, BUFFALO, N.Y.

NOT TO SCALE

NUS CORPORATION
A Halliburton Company

APPENDIX B

BACKGROUND INFORMATION

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE: 5-20-87	TIME: 0930

DISTRIBUTION: TRW/JH WILLIAMS DIVISION

BETWEEN: Michelle Taylor	OF: NYDEC Albany N.Y.	PHONE: (518) 457-3691

AND: Randy Rice

DISCUSSION:

Michelle Taylor informed me that TRW/JH Williams Division is no longer a generator of hazardous waste. In 1985, the NYDEC listed the on-site disposal area as closed, that is to say, cleaned up. Michelle believes that the site was listed on the NYDEC Inactive Waste Sites list in 1983, and then documented as closed in 1985. Michelle told me that EP Toxicity tests were, "so far below EPA standards," thus rendering the site non-hazardous. Michelle also said that earth borings for groundwater contamination came up negative. Termini Associates in Buffalo did the testing and boring under NYDEC supervision. A report of the results of these tests, plus a copy of the NYDEC Inactive Waste Sites list, will be sent to me. I asked her if any soil was removed, or if any remedial operation was performed, but she did not have that information.

ACTION ITEMS:

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-

Henry G. Williams
Commissioner

JUN 17 1987

RECEIVED

JUN 22 1987

NUS CORPORATION
REGION II
SENT TO_____

Mr. Randy Rice
NVS Corporation
1090 King George's Post Road
Suite 1103
Edison, NJ 08837

Dear Mr. Rice:

RE: J. H. Williams Industrial Products, Division of TRW Tonawanda, NY; EPA I.D. No. NYD051814077

Per our telephone conversation of May 20, 1987, enclosed is a copy of the Technical Report of closure of the referenced site. This report was submitted to this office on June 27, 1985 in reference to closure of RCRA units at the site.

Also enclosed is a copy of pages 9-213 and 9-214 of the January 1985 update of the Inactive Hazardous Waste Disposal Site Report which was published by this Department. New York Starte has a program for evaluation and remediation of contamination from past hazardous waste practices. If you have further questions regarding New York State's involvement with this aspect of the site, you should contact Mr. John S. Tygert at (716) 847-4585.

If you have any further questions concerning the facility's RCRA closure, please contact me at (518) 457-3274.

Sincerely,

Michelle M. Taylor

Michelle M. Taylor
Assistant Sanitary Engineer
Facility Permit Section
Bureau of Hazardous Waste Operations
Division of Solid and Hazardous Waste

Enclosures

cc: J. Tygert, Region 9

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

CLASSIFICATION CODE: 4 REGION: 9 SITE CODE: 915057

NAME OF SITE : TRW (J.H. Williams Div.)
STREET ADDRESS: 400 Vulcan Street
TOWN/CITY: COUNTY: ZIP:
Tonawanda Erie

SITE TYPE: Open Dump-X Structure- Lagoon- Landfill- Treatment Pond-
ESTIMATED SIZE: 1 +/- Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: TRW (J.H. Williams Div.)
CURRENT OWNER ADDRESS.: 400 Vulcan Street, Tonawanda, NY
OWNER(S) DURING USE...: TRW (J.H. Williams Div.)
OPERATOR DURING USE...: Same
OPERATOR ADDRESS.....: 400 Vulcan Street, Tonawanda, NY
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From Unknown To 1982

SITE DESCRIPTION:
Reportedly oils and solvents had been disposed of on plant site. Material excavated and disposed at approved facility, then area paved with concrete.

→[Code 4: Site properly closed]

HAZARDOUS WASTE DISPOSED: Confirmed- Suspected -X

TYPE	QUANTITY (units)
Cutting oils and solvents	Unknown

ANALYTICAL DATA AVAILABLE:

Air- Surface Water- Groundwater- Soil- Sediment- None-X

CONTRAVENTION OF STANDARDS:

Groundwater- Drinking Water- Surface Water- Air-

LEGAL ACTION:

TYPE..: State- Federal-
STATUS: In Progress- Completed-

REMEDIAL ACTION:

Proposed- Under Design- In Progress- Completed-
NATURE OF ACTION:

GEOTECHNICAL INFORMATION:
SOIL TYPE: Industrial fill
GROUNDWATER DEPTH: Unknown

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

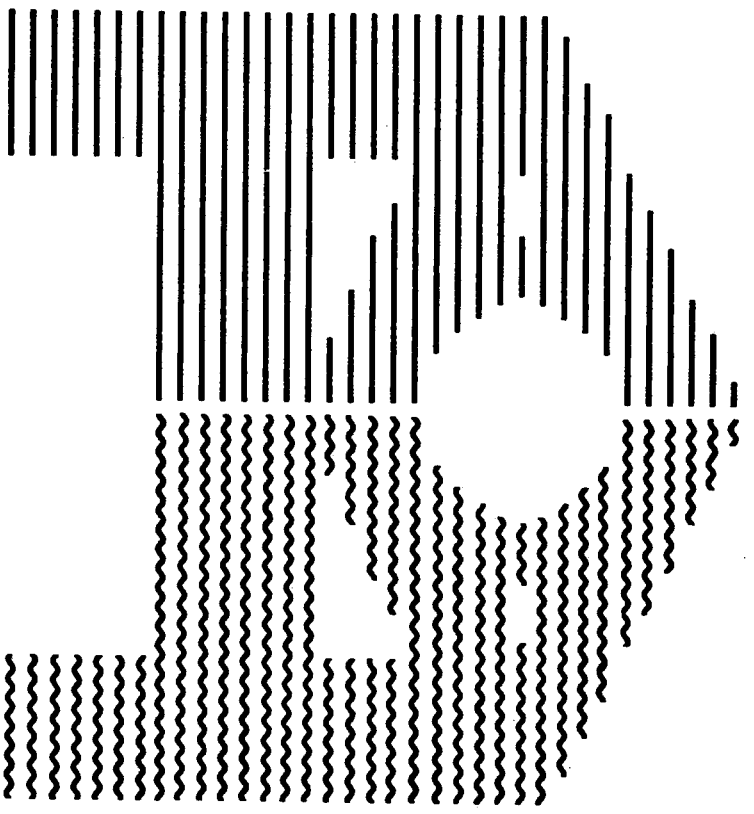
No apparent environmental problems at this time.

ASSESSMENT OF HEALTH PROBLEMS:

Insufficient information

PERSON(S) COMPLETING THIS FORM:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION	NEW YORK STATE DEPARTMENT OF HEALTH
NAME.: John S. Tygert, P.E.	NAME.: R. Tramontano
TITLE: Senior Sanitary Engineer	TITLE: Bur. Tox. Subst. Assess.
NAME.: Roberto A. Olazagasti	NAME.:
TITLE: Solid Waste Management Spec.	TITLE:
DATE.: 01/24/85	DATE.: 01/24/85



TECHNICAL REPORT

TERMINI ASSOCIATES
Technical Consultants
1965 Sheridan Drive
Buffalo, New York 14223
716-877-3155

TERMINI ASSOCIATES
TECHNICAL CONSULTANTS

1965 Sheridan Drive
Buffalo, New York 14223
716-877-3155

June 27, 1985

Ms. Michelle Taylor
Junior Engineer
Permits Section
Bureau of Hazardous Waste Technology
Division of Solid and Hazardous Wastes
New York State Department of Environmental
Conservation
50 Wolf Road
Albany, NY 12233

Dear Ms. Taylor:

Attached is the Plan of Closure for J. H. Williams Industrial Products, Inc.'s sludge storage facility, EPA ID No. NYD051841077. As we discussed in our telephone conversation of June 26, 1985, J. H. Williams Industrial Products, Inc., is requesting that the facility be reclassified. The justification and previous submissions to the New York State DEC are included in this report as Appendices E, F, and G. Although this information is given in this Plan of Closure, it is intended to provide information only for your use, and is not considered part of this plan.

If more information is required for reclassification, please notify us, and we will prepare the final submission.

Upon receipt of your letter that this Plan of Closure is approved, J. H. Williams Industrial Products, Inc., will provide the engineering certification as per 40 CFR 264.115 and 6 NYCRR Part 360.

If you have any questions, please contact this office.

Very truly yours,

TERMINI ASSOCIATES

Rock Termini

C. R. Termini
President

cio
cc: R. Klimecko
JH-241-006

DISTRIBUTION LIST

Copy No.

1) New York State DEC, Michelle Taylor, Junior Engineer (signed)

2) J. H. Williams Industrial Products, Inc., Mr. Richard Klimecko, Engineer (signed)

3) TERMINI ASSOCIATES' file copy

TERMINI ASSOCIATES
TECHNICAL CONSULTANTS

1965 Sheridan Drive
Buffalo, New York 14223
716-877-3155

PLAN OF CLOSURE FOR SLUDGE STORAGE FACILITY

Prepared For:

J. H. WILLIAMS INDUSTRIAL PRODUCTS, INC.

Mr. Richard Klimecko
Engineer

June 27, 1985

TERMINI ASSOCIATES

C. R. Termini
President

Project Code: JH-241-002

PLAN OF CLOSURE FOR SLUDGE STORAGE FACILITY

1.0 INTRODUCTION

On November 17, 1980, J. H. Williams Industrial Products, Inc., filed for an EPA ID Number as a hazardous waste handler. A subsequent submission by J. H. Williams Industrial Products, Inc., requested interim status as an owner/operator of a Treatment, Storage, or Disposal Facility (TSDF) as per 40 CFR 265. As part of this submission, a sludge storage facility was described.

The facility was used to store sludge that had accumulated from treating the electroplating process effluent by pH adjustment. When the facility was active, the sludge was periodically removed to an EPA approved disposal site.

2.0 GENERAL

Within the past three years, and since obtaining the EPA ID Number, the facility's ownership has been transferred to the Polaris Capital Group. During this three year period, significant process changes have been instituted which have eliminated the need for the sludge storage facility. J. H. Williams Industrial Products, Inc., had therefore decided to abandon this facility in 1983. Closure was completed in 1984 as a condition to the transfer of ownership.

Based on this decision, the closure plan contained herein is submitted in accordance with the following regulations:

a) 40 CFR 264.112-264.114 (Certification as per 264.115 will be provided for the approved plan.)
b) 40 CFR 265 Subpart G
c) 40 CFR 261.24
d) 6 NYCRR Part 360
e) 6 NYCRR Part 365.2

3.0 PROCESS DESCRIPTION

The sludge storage facility was located immediately south of the electroplating process as shown on Figure I. Figure II illustrates the subsurface portion of the facility and its different components.The sludge storage facility consisted of 4 inground concrete tanks, a 20' x 40' metal super structure on a concrete slab and foundation. No chemicals were stored within the building.

The waste sludges stored at the facility were determined to be hazardous by their EP toxicity as described in 40 CFR 261.24. This determination was based upon the data obtained

from testing samples of sludge. The report and data are given in Appendix A.

4.0 CLOSURE SCHEDULE

After it was determined that the sludge storage facility was no longer required due to process changes made in 1981-1982, J. H. Williams Industrial Products, Inc., personnel decided to close the facility. The work required to complete this closure was performed in two phases. Phase A consisted of sludge removal and pH adjustment and was performed in 1983. Phase B consisted of maintaining the facilty for possible reuse for other production processes. However, as a condition of the proposed sale of J. H. Williams Industrial Products, Inc., to Polaris Capital Group, the sludge storage facility was closed completely. The above grade portions were removed, and all subsurface structures were backfilled with clean, select backfill. To comply with the proposed conditions of sale, all work necessary to complete closure of the facility was performed by September 1984.

5.0 ESTIMATED CLOSURE COST

The total closure cost for the pollution control facility is $63,704.94 and is summarized in Table I. The cost summary lists the major cost components separately. The costs for soil and demolished material testing, to determine if the storage facilities were clean, are included in the Field Engineering and Inspection Cost Component.

6.0 FACILITY CLOSURE PLAN

6.1 SCOPE

This closure plan has been prepared to conform with existing federal and state regulations regarding closure performance standards and is based upon actual events. Specifically, the requirements of 40 CFR 264.111 and 264.112 were used as the main basis for the closure program. To conform with this section, it was determined that complete demolition of the above grade portions and cleaning of the subsurface portions, followed by testing to determine that no sludge or wastes remained, would be the best and most efficient procedure. It was determined that removal of the subsurface concrete walls of the storage tanks might cause foundation and settlement problems with adjacent structures. Consequently, these subsurface structures were left in place and buried.

Closure of the facility was performed in two phases. Phase A consisted of sludge removal and was performed in 1983. Phase B consisted of the demolition and backfilling of the physical structures and was performed in 1984.

6.2 SLUDGE TREATABILITY

As described in Appendix A, the sludge present in the storage tanks was determined to be hazardous due to EP Toxicity. To properly treat and dispose of this sludge, a treatability program was performed whereby an appropriate treatment method could be established.

Appendix B contains sludge testing data after various adjustments for pH. Based upon the data obtained, it was determined that neutalization of the low pH sludge with caustic, metallic sludge gravity settled and disposed and discharge of the supernatant to the Buffalo Sewer Authority would be the most practical disposal solution.

A more thorough description of the testing data is given in Appendix B.

6.3 CLOSURE ACTIVITIES

As required by 40 CFR 264.112, the following closure plan is submitted:

Phase A

1) The use of the facility as a sludge storage system was disontinued in 1983. At that time, it was estimated by J. H. Williams Industrial Products, Inc., personnel that approximately 7,000 gallons of sludge were present in the holding tank. (This figure was later confirmed to be approximately 50,000 gallons of sludge after work began and a more accurate determination was possible.)

2) The sludge and liquid portions of the contained materials were agitated and mixed to allow for their removal from the holding tanks by pumping. This mixing was accomplished through the use of both an agitator and a sludge-handling pump which mixed by returning the pumped material back into the holding tanks.

3) Following the continuous agitation, the mixture was pumped into a leak proof, vinyl lined roll-off provided by C.I.D., Inc. Disposal was at SCA's (now Chemical Waste Management, Inc.) Model City, New York, facility. Within the roll-off the mixture's pH was adjusted with caustic to above 9 to precipitate any dissolved metals. The metals present in the mixture subsequently settled out and the supernatant was discharged to the Buffalo Sewer Authority.

4) After a number of batches of mixture were treated in this manner and the sludge accumulated to approximately half the depth of the roll-off, the sludge was thickened with bentonite. This thickening increased

the solid's content of the sludge to allowable disposal limits.

5) When almost all of the sludge was removed, the walls and floors of the storage tanks were acid washed then caustic washed to remove traces of metals. Discharge of these wash waters was to the roll-off for treatment and metals separation. A final rinse consisted of a potable water spray, which was discharged directly to the Buffalo Sewer Authority after a pH check.

6) After all sludges were removed and prior to the final wash of the storage tanks, all equipment was washed down. All wash water was treated for metals and pH prior to being discharged to the Buffalo Sewer Authority.

7) Prior to shipment, a manifest was prepared as per existing NYSDOT and EPA regulations. Copies of the manifest are given in Appendix C.

Phase B

1) In 1984 it was determined that the sludge storage facility was no longer necessary and that it could not be adapted for other uses. The Polaris Captial Group, as a condition of sale, therefore decided to backfill the below grade structures and to remove the above grade structures.

2) Prior to backfilling of the storage tanks, soil testing in the vicinity of and below the tanks was performed to determine if any leaks or spills occurred during the life of the facility or during closure. The testing indicated that no abnormal levels of metals or pH were present and therefore indicated that no spills occurred in the past or during closure. The results of this subsurface investigation are included in Appendix D.

3) The inground storage tanks were backfilled with approximately 330 cy of clean fill obtained from local sources.

4) The metal super structure was dismantled and removed off-site for erection and use elsewhere.

7.0 SAFETY PROCEDURES

During the performance of handling hazardous wastes and wash waters, all workers wore protective rubber clothing. This clothing included boots, gloves, pants, and coats. Hardhats, full-face shields, and safety glasss were also worn throughout the life of this project. No external breathing

apparatus was required since the tanks were open to the atmosphere, and no harmful vapors were present.

After removal of the hazardous wastes and during the final wash of the storage tanks, all protective equipment was washed with high pressure water to remove any traces of sludge. Any protective equipment which was damaged during the performance of the work was disposed of with the hazardous wastes.

8.0 EQUIPMENT USED DURING CLOSURE

No large operator-required equipment was necessary during Phase A of the closure activities. All equipment and tools consisted of a small agitator, two small pumps, a small mixing tub (approximately 6' x 3' x 1'), and miscellaneous small hand tools. All equipment and hand tools were washed before removal from the site as described in Section 6.3.

Equipment used during Phase B of the closure activities did not require cleaning since the work was performed in on uncontaminated area. However, the equipment consisted of two 5cy dump trucks, a back hoe, and miscellaneous hand tools.

9.0 POST CLOSURE ACTIVITIES

All sludge materials were removed and the surrounding site was checked for contamination before demolition and backfill activities (Phase B) were performed. Since it was verified that the site was not contaminated and since no sludge is being stored at this facility, no post-closure activities are required.

10.0 REVISED FACILITY STATUS

This section is given for information only and is not considered part of this closure plan.

In 1982 J. H. Williams Industrial Products, Inc., performed a study to determnine the proper classification of their facility. As part of this study, the original RCRA Part A application (included as Appendix E) was reviewed for its validity and accuracy as it pertained to the existing facility. To perform this study, the existing processes and process discharges were sampled, tested, and described. Based upon the testing results and the process descriptions, it became apparent that a number of wastestream classifications listed in the original Part A application did not actually apply to this facility.

J. H. Wiliams Industrial Products, Inc., consequently submitted a revised Part A application, which more closely described the actual facility's discharge. This revised Part A application is included as Appendix F and differs primarily

from the original Part A application through the elimination of the F007-F010 and F012 waste descriptions. Other revisions are also noted on the revised Part A application.

The report justifying the revised Part A application is given in Appendix G.

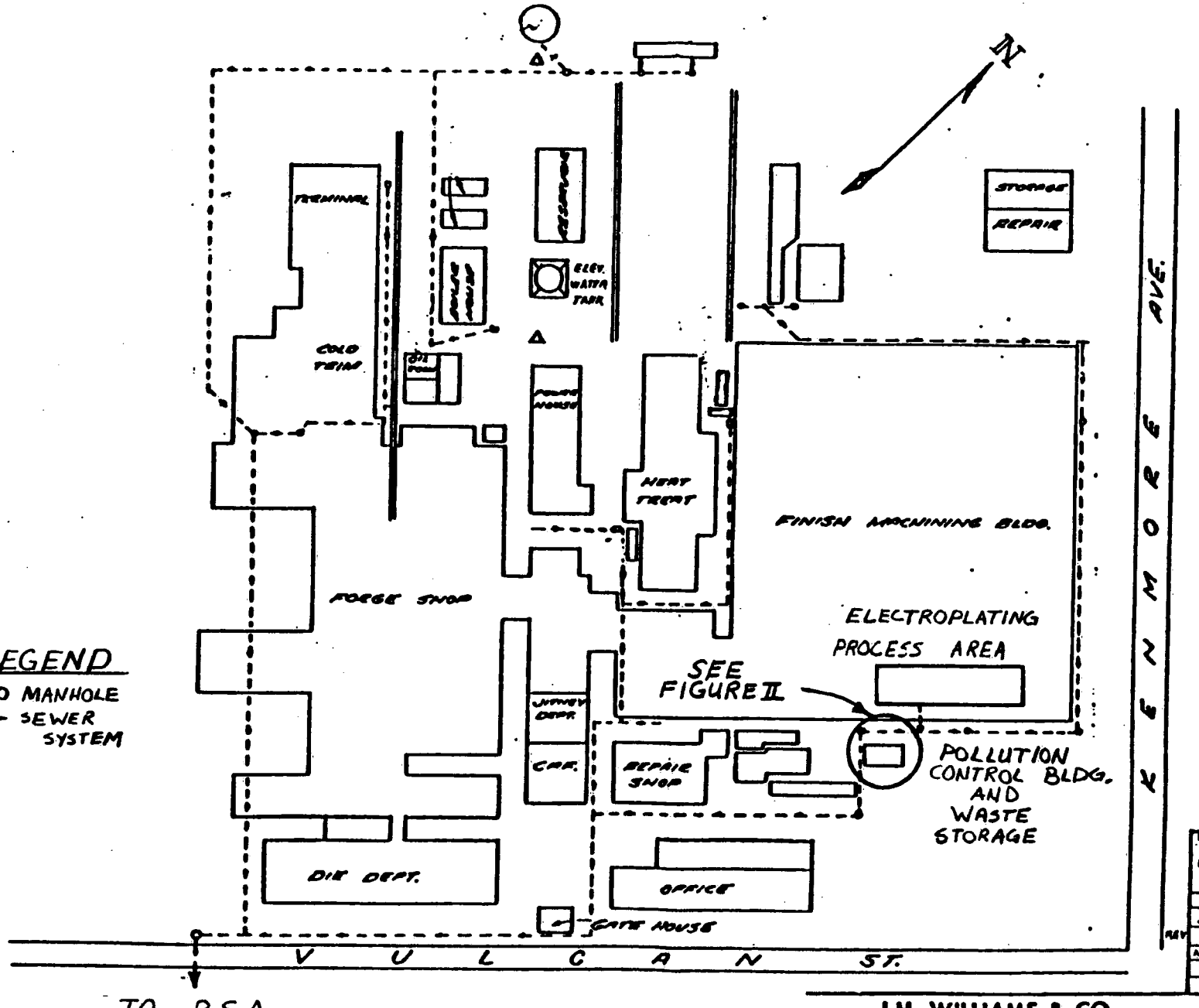
TABLE I

Cost Summary of Closure for Pollution Control Facility

1)	Remove sludge from tanks	$	14,046.39
2)	Field engineering and inspection during sludge removal		2,641.46
3)	Remove metal building, break and remove concrete foundation walls and base slab off-site		12,100.00
4)	Furnish, deliver and place backfill		4,000.00
5)	Trench demolitions, break and remove furnish, deliver and place backfill		1,320.00
6)	Soil sampling		10,077.00
7)	Closure plan preparation and certification		7000.00
8)	Sub Total	$	47,188.85
9)	Administrative (15%)		7,078.32
10)	Contingency (20%)		9,437.77
11)	TOTAL	$	63,704.94

TERMINI ASSOCIATES

FIGURE I



LEGEND

O MANHOLE

---- SEWER SYSTEM

TITLE: PLANT PLOT PLAN			NO.
FOR: CLOSURE PLAN			
DRAWN	CHECKED	SCALE	DATE
E.J.K.		1" = 100'	15 Oct 76
REV. FAN	8/9/80		DRAWING NO.
APPROVED	APPROVED		C-63294
			SUPERSEDES

J.H. WILLIAMS & CO.
BUFFALO, NEW YORK

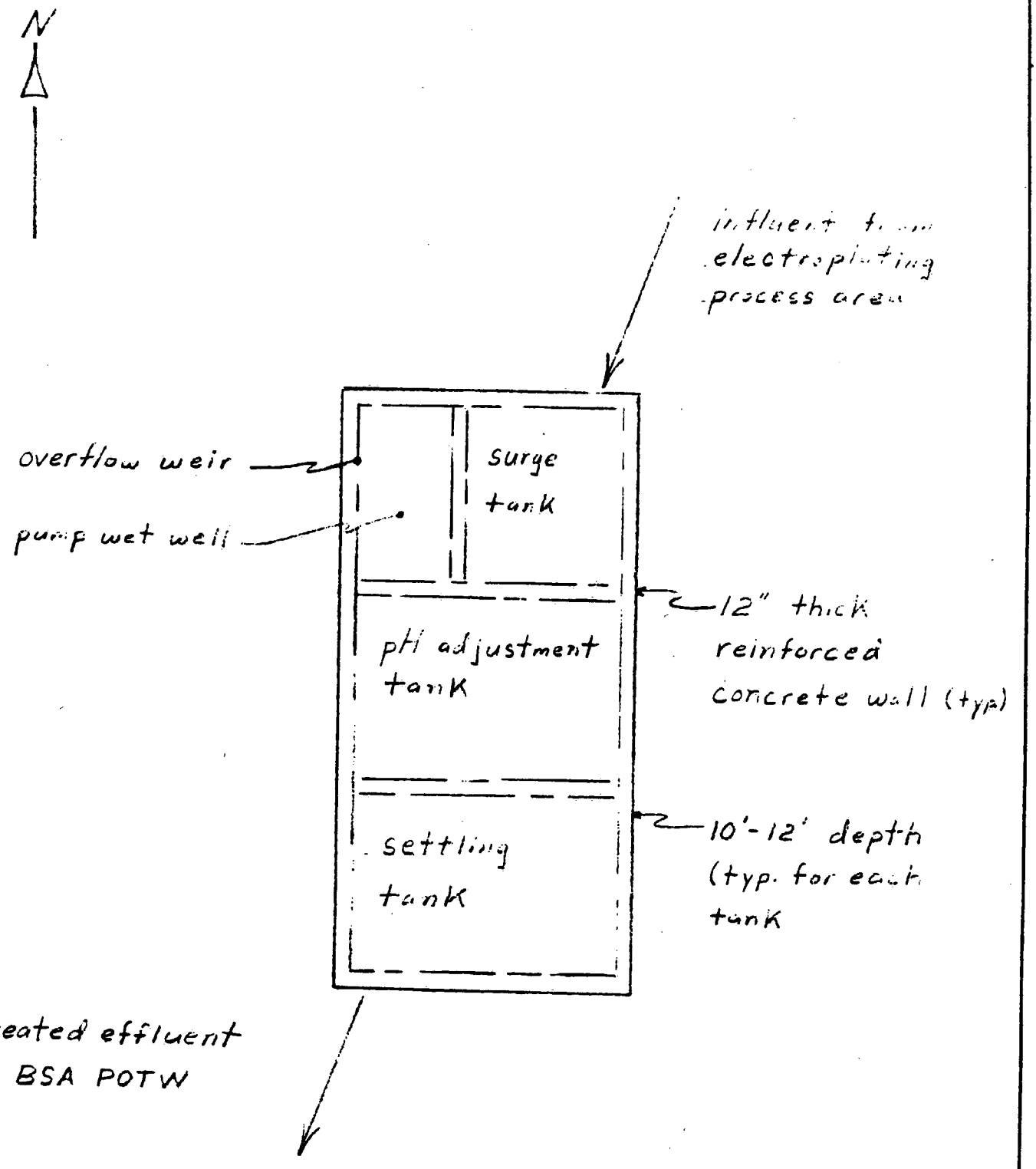


FIGURE II

TERMINI ASSOCIATES	POLLUTION CONTROL BUILDING - PLAN BELOW GRADE	JOB NO. : JH-241 DATE: 5/21/85 SCALE: NONE REVISION:

APPENDICES

APPENDIX A: RCRA Evaluation of Waste Sludge Toxicity

APPENDIX B: Sludge Treatability Evaluation

APPENDIX C: Manifests

APPENDIX D: Evaluation of Pollution Abatement Building Site

APPENDIX E: Original RCRA Part A Application

APPENDIX F: Revised RCRA Part A Application

APPENDIX G: RCRA Determination of Process Wastestreams

APPENDIX A

RCRA Evaluation of Waste Sludge Toxicity

RCRA EVALUATION

OF

WASTE SLUDGE TOXICITY

Prepared For:

Frank Wenske

J. H. WILLIAMS
DIVISION OF TRW, INC.

April 14, 1983

TERMINI ASSOCIATES

ORIGINAL SIGNED
C. R. Termini

C. R. Termini
President

Project Code: JH-177-001

TECHNICAL REPORT

1.0 TITLE

RCRA Evaluation of Waste Sludge Toxicity

2.0 PURPOSE

To determine the compatibility of waste pit sludge with a sanitary landfill operation.

3.0 SAMPLES

One sample of pit sludge was obtained on January 31, 1983, from each of four below-ground collection stations by J. H. Williams personnel. The samples were received by TERMINI ASSOCIATES from Mr. Frank Wenske on February 2, 1983, and assigned the following Log Numbers:

Sample	Log Number
Pit Sludge, 3rd Station	3017
Pit Sludge, 2nd Station	3018
Pit Sludge, 1st Station	3019
Pit Sludge, 4th Station	3020

4.0 RESULTS

The results for the above samples are presented in Table I.

5.0 METHODOLOGY

The above samples were analyzed in accordance with procedures established in "Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods" (EPA SW-846, 8/8/80).

6.0 DISCUSSION

The testing was conducted in two phases as the initial results warranted further evaluation. For the first phase, the four samples were composited based on the relative volumes of each pit station. The composite was tested for Corrosivity, Reactivity, and EP Toxicity (chromium and nickel only). Although nickel is not listed in 40 CFR Part 261.24, prior knowledge of the waste stream suggested nickel be evaluated. After review of the initial results, additional testing was conducted for the remainder of the EP Toxic heavy metals and selected physical characteristics.

Although the waste does not fail any of the RCRA Subpart C criteria, the presence of 0.9% nickel shown to be almost completely soluble at pH 5.0 would prohibit disposal in a sanitary landfill. Further evaluation to determine an alternative disposal method has been undertaken and will be reported separately.

TABLE I

Parameter	Station 1	Station 2	Station 3	Station 4
Log Number	3019	3018	3017	3020
Solids, %	21.	27.	32.	17.
Specific Gravity	1.01	1.01	1.02	1.01
Odor	none	slight	phenolic	septic
Relative % (vol.)	27.	17.	28.	28.

PIT SLUDGE COMPOSITE

Total Cyanide, ppm	1.76
pH Units	6.70
Nickel, ppm	9347.
EP Extraction	
Arsenic, mg/L	0.21
Barium, mg/L	5.1
Cadmium, mg/L	0.008
Chromium, mg/L	0.018
Lead, mg/L	< 0.001
Mercury, mg/L	< 0.0002
Nickel, mg/L	458.
Selenium, mg/L	0.002
Silver, mg/L	< 0.001

APPENDIX B

Sludge Treatability Evaluation

WASTE TREATABILITY EVALUATION

Prepared For:

J. H. WILLIAMS DIVISION - TRW

Mr. Frank Wenske
Facilities Engineer

April 13, 1983

TERMINI ASSOCIATES

ORIGINAL SIGNED
C. R. Termini

C. R. Termini
President

Project Code: JH-177-002

TECHNICAL REPORT

1.0 TITLE

Waste Treatability Evaluation

2.0 PURPOSE

Determine the discharge quality of sludge supernatant after subjecting the sludge to neutralization and solidification regimes.

3.0 SAMPLE COLLECTION

A composite grab sample of wastewater sludge was collected on April 4, 1983, by Mr. Guy Gettys of TERMINI ASSOCIATES from the four inground tanks located in the Pollution Control Building at J. H. Williams Division - TRW, 400 Vulcan Street, Buffalo, New York 14207. The final composite was prepared on-site in accordance with the tank volume data provided by Mr. Frank Wenske, Facilities Engineer, J. H. Williams (see Table I).

3.1 SAMPLE IDENTITY

Aliquots of the original grab composite sample were subjected to various treatment regimes. Table II presents the Sample Log Numbers assigned to each portion for purposes of identification.

4.0 RESULTS

The analytical results obtained for each sample aliquot are presented in Table III.

5.0 METHODOLOGY

The treatment regimes indicated were conducted in accordance with good laboratory practices and best professional judgement. The analytical testing was performed in accordance with procedures established in "Test Methods for Evaluation of Solid Waste Physical/Chemical Methods," (EPA SW-846, July 1982).

6.0 DISCUSSION

The grab composite sludge sample, after settling, produced a supernatant containing 25 mg/L of nickel with a pH value of 5.49. Various treatment regimes were tested with the most effective being to adjust the sludge pH to 10.0 with mixing followed by a 30 minute period for settling. The supernatant resulting from this procedure contained 0.320 mg/L of nickel.

Values for cadmium, chromium, manganese, and zinc were found to be an order of magnitude lower. Therefore, the data obtained in the present study indicate that treatment of the sludge currently stored in the inground tanks by pH adjustment to 10.0 during rapid stirring followed by quiescent settling of at least 30 minutes in duration will produce a supernatant of acceptable quality for discharge to local POTW.

TABLE I

Inground Tank Volumes
Pollution Control Building

Tank Identity	Volume, gal
1st Station	1890
2nd Station	1190
3rd Station	1940
4th Station	1940

TABLE II

Sample Identity	Sample Log Number
Untreated Grab Composite	3199
Untreated Grab Composite Supernatant	3335
Supernatant after pH adjustment to 10.0	3213
Supernatant after pH adjustment to 11.5	3214

TABLE III

Parameter	Untreated Supernatant	pH 10.0 Supernatant
Log Number	3335	3213
pH, units	5.49	10.0
Nickel, mg/L	24.8	0.320
Cadmium, mg/L	---	0.023
Chromium, mg/L	---	0.025
Manganese, mg/L	---	0.015
Zinc, mg/L	---	0.037

APPENDIX C

Manifests

48-14-1 (11/80)

See cover sheet for instructions

PLEASE TYPE

Part A:

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

HAZARDOUS WASTE MANIFEST

DOCUMENT NO. NY 141489 9

GENERATOR NAME: TRW - J.H. WILLIAMS DIVISION — PHONE: (716) 875-3200 — EPA ID NO.: ~~NYD049836679~~

SITE ADDRESS: 400 VULCAN STREET BUFFALO, NY 14207 — NY D051814077

TRANSPORTER NO. 1: CID REFUSE SERVICE — PHONE: (716) 496-5514 — NYD080322217

SITE ADDRESS: P.O. BOX 152 HAMBURG, N.Y. 14075

TRANSPORTER NO. 2: / — PHONE:

SITE ADDRESS: /

TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: SCA CHEMICAL SERVICES — PHONE: (716) 694-1212 — NYD049836679

SITE ADDRESS: 1135 BALMER RD. MODEL CITY, NY 14107

THIS FORM IS NO. 1 OF A TOTAL OF 1 THE FIRST MANIFEST DOCUMENT NO. IS NY

	PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
1	HAZARDOUS WASTE (n.o.s.) (electroplating WASTE X treatment sludge)	ORM-E	NA9189		17	ton	001			
3										
4										
5										
6										

To Be TYPED by Generator

SPECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A NONHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

GENERATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were consigned to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also conforms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE: R J Klimecko — DATE SHIPPED: 06 (Mo.) 23 (Day) 83 (Yr.) — EXPECTED ARRIVAL DATE: 06 (Mo.) 23 (Day) 83 (Yr.)

Please type name also: R. J. KLIMECKO

TRANSPORTER NO. 1 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest": Ronald Regnat

TRANSPORTER NO. 1 PERMIT NUMBER: NA-0447 — DATE RECEIVED: 06 (Mo.) 23 (Day) 83 (Yr.)

COPY 1 Disposal State—Mailed by Generator

Tear at this Perforation

48-14-1 (11/80)

See cover sheet for instructions

PLEASE TYPE

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

HAZARDOUS WASTE MANIFEST

DOCUMENT NO. NY 141493 5

Part A:

GENERATOR NAME: TRW - J.H. WILLIAMS DIV.	PHONE: (716) 875-3200	EPA ID NO.: NYD054181407
SITE ADDRESS: 400 VULCAN STREET BUFFALO, NY 14207		
TRANSPORTER NO. 1: CID REFUSE SERVICE	PHONE: (716) 496-5514	NYD080322117
SITE ADDRESS: P.O. BOX 152 HAMBURG, NY 14075		
TRANSPORTER NO. 2: /	PHONE:	
SITE ADDRESS: /		
TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: SCA CHEMICAL SERVICES	PHONE: (716) 694-1212	NYD049836799
SITE ADDRESS: 1135 BALMER RD. MODEL CITY, NY 14107		

THIS FORM IS NO. 4 OF A TOTAL OF 4 THE FIRST MANIFEST DOCUMENT NO. IS NY 141489919

To Be TYPED by Generator

	PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
1	HAZARDOUS WASTE (n.o.s.) (electroplating waste treatment sludge)	ORM-E	NA 9189		019	ton	001			
2										
3										
4										
5										
6										

SPECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A NONHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

GENERATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were consigned to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also conforms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE (Please type name also)	DATE SHIPPED Mo. Day Yr.	EXPECTED ARRIVAL DATE Mo. Day Yr.
TRANSPORTER NO. 1 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."	TRANSPORTER NO. 1 PERMIT NUMBER	DATE RECEIVED Mo. Day Yr.

COPY 1 Disposal State—Mailed by Generator

Tear at this Perforation

Part B: GEN EPA ID#

To be Transporter—FILL OUT

TRANSPORTER NO. 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."	DATE DELIVERED Mo. Day Yr.
TRANSPORTER NO. 2 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest." / TRANSPORTER NO.2 PERMIT NUMBER	DATE RECEIVED Mo. Day Yr.
TRANSPORTER NO. 2 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."	DATE DELIVERED Mo. Day Yr.

To be FILL OUT

TREATMENT STORAGE OR DISPOSAL FACILITY INDICATION OF ANY DIFFERENCES BETWEEN MANIFEST AND SHIPMENT OR LISTING OF REASONS FOR AND DISPOSITION OF REJECTED MATERIALS	HANDLING METHOD 1 2 3 4 5 6
TREATMENT STORAGE OR DISPOSAL FACILITY SIGNATURE "Upon visual in-	SIGNATURE / DATE RECEIVED

48-14-1 (11/80)

See cover sheet for instructions

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PLEASE TYPE

HAZARDOUS WASTE MANIFEST

DOCUMENT NO. NY 141492 6

Part A:

GENERATOR NAME: TRW- J.H. WILLIAMS DIV.	PHONE: (716) 875-3200	EPA ID NO.: NYD051818407
SITE ADDRESS: 400 VULCAN STREET BUFFALO, NY 14207		
TRANSPORTER NO. 1: CID REFUSE SERVICE	PHONE: (716) 496-5514	NYD018032227
SITE ADDRESS: P.O. BOX 152 HAMBURG, NY 14075		
TRANSPORTER NO. 2: —	PHONE:	
SITE ADDRESS: —		
TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: SCA CHEMICAL SERVICES	PHONE: (716) 694-1212	NYD049836679
SITE ADDRESS: 1135 BALMER RD. MODEL CITY, NY 14107		

THIS FORM IS NO. 3 OF A TOTAL OF 4 THE FIRST MANIFEST DOCUMENT NO. IS NY 141148999

To Be TYPED by Generator

	PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
1	HAZARDOUS WASTE (n.o.s.) (electroplating waste treatment sludge)	ORM-E	NA 9189		17	ton	001			
2										
3										
4										
5										
6										

SPECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A NONHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

GENERATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were consigned to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also conforms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE (Please type name also)	DATE SHIPPED Mo. Day Yr.	EXPECTED ARRIVAL DATE Mo. Day Yr.
TRANSPORTER NO. 1 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."	TRANSPORTER NO. 1 PERMIT NUMBER	DATE RECEIVED Mo. Day Yr.

COPY 1 Disposal State—Mailed by Generator

Tear at this Perforation

Part B:

GEN EPA ID#

Transporter—FILL OUT:

TRANSPORTER NO. 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."		DATE DELIVERED Mo. Day Yr.
TRANSPORTER NO. 2 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."	TRANSPORTER NO.2 PERMIT NUMBER	DATE RECEIVED Mo. Day Yr.
TRANSPORTER NO. 2 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."		DATE DELIVERED Mo. Day Yr.

—FILL OUT

TREATMENT STORAGE OR DISPOSAL FACILITY INDICATION OF ANY DIFFERENCES BETWEEN MANIFEST AND SHIPMENT OR LISTING OF REASONS FOR AND DISPOSITION OF REJECTED MATERIALS	HANDLING METHOD 1 2 3 4 5 6
TREATMENT STORAGE OR DISPOSAL FACILITY SIGNATURE "Upon visual in...	SIGNATURE / DATE RECEIVED

48-14-1 (11/80)

See cover sheet for instructions

PLEASE TYPE

Part A:

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

HAZARDOUS WASTE MANIFEST

DOCUMENT NO. NY 141490 8

GENERATOR NAME: TRW - J.H. WILLIAMS DIV.	PHONE: (716) 875-3200	EPA ID NO.: NYD051814071 7
SITE ADDRESS: 400 VULCAN STREET BUFFALO, NY 14207		
TRANSPORTER NO. 1: CID REFUSE SERVICE	PHONE: (716) 496-5514	NYD080322217
SITE ADDRESS: P.O. BOX 152 HAMBURG, NY 14075		
TRANSPORTER NO. 2: /	PHONE:	
SITE ADDRESS: /		
TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: SCA CHEMICAL SERVICES	PHONE: (716) 694-1212	NYD049836791
SITE ADDRESS: 1135 BALMER RD MODEL CITY, NY 14107		

THIS FORM IS NO. 2 OF A TOTAL OF 4 THE FIRST MANIFEST DOCUMENT NO. IS NY 141148991

	PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
1	HAZARDOUS WASTE (n.o.s.)	ORM-E	NA 9189		17	ton	001			
X	(electroplating waste treatment sludge)									
3										
4										
5										
6										

To be TYPED by Generator

SPECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A NONHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

GENERATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were consigned to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also conforms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE	DATE SHIPPED	EXPECTED ARRIVAL DATE
X Please type name also	Mo. Day Yr.	Mo. Day Yr.
TRANSPORTER NO. 1 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."	TRANSPORTER NO. 1 PERMIT NUMBER	DATE RECEIVED Mo. Day Yr.

COPY 1 Disposal State—Mailed by Generator

Tear at this Perforation

Part B: GEN EPA ID#

TRANSPORTER NO. 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."	DATE DELIVERED Mo. Day Yr.
TRANSPORTER NO. 2 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest." / TRANSPORTER NO.2 PERMIT NUMBER	DATE RECEIVED Mo. Day Yr.
TRANSPORTER NO. 2 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."	DATE DELIVERED Mo. Day Yr.

Transporter — FILL OUT

TREATMENT STORAGE OR DISPOSAL FACILITY INDICATION OF ANY DIFFERENCES BETWEEN MANIFEST AND SHIPMENT OR LISTING OF REASONS FOR AND DISPOSITION OF REJECTED MATERIALS	HANDLING METHOD
	1 2 3 4 5 6

FILL OUT

TREATMENT STORAGE OR DISPOSAL FACILITY SIGNATURE "Upon visual in-	SIGNATURE	DATE RECEIVED

Sales Number Nº 3110

SCA Chemical Services

WASTE PRODUCT SURVEY FORM

GENERAL INSTRUCTIONS: In order for us to determine whether we can lawfully, safely and environmentally transport, store, treat or dispose of your waste stream, we must ask certain information about your waste. All of the information we seek is necessary, for our purposes and yours. Please be complete, accurate and true in your answers: if your response is "none", so indicate. All known and suspected Hazards must be divulged. Answers must be in ink or typewritten. Information you provide will be maintained in strictest confidence. Please make a copy of this form for your records and send the original to:

SCA Chemical Services, Inc.
1135 Balmer Road (P.O. Box 200)
Model City, New York 14107
Attn: Waste Product Evaluation

CUSTOMER NAME AND STATE/EPA IDENTIFICATION NUMBERS

Name of Company	Division of Company
03 TERMINI ASSOCIATES	04 ENVIRONMENTAL

Generator EPA ID Number	S I C Code	State Generator ID Number
05 NYD051814077	06 347	07 NYD051814077

CUSTOMER'S MAILING ADDRESS

Street or Box Number	County
10 1965 SHERIDAN DRIVE	11 ERIE

City/Town	ST	Zipcode	Country (outside USA)
12 BUFFALO	13 NY	14 14223	15

ADDRESS OF FACILITY GENERATING THE HAZARDOUS WASTE

Street or Rural Number	County
20 400 VULCAN STREET	21 ERIE

City/Town	ST	Zipcode	Country (outside USA)
22 BUFFALO	23 NY	24 14207	25

Name of Contact at Facility (in case of emergency)	Contact's Telephone Number
26 C.R. TERMINI	27 877-3155

EPA REQUIRED INFORMATION

EPA Waste Description - Note: There are Standards applicable to this description — Refer to 40 CFR Part 261 Subpart D

10 WASTEWATER TREATMENT SLUDGE FROM ELECTROPLATING OPERATION

EPA Hazardous Waste Code(s) - Enter the Primary Code in the first box					Is this an EPA Hazardous Waste?	DOT Hazard Class
11 F006	12	13	14	15	21 Y|N|P| Y	ORM - E

DOT Shipping Name	NA/UN Number
24 HAZARDOUS WASTE, n.o.s. (electroplating wastewater treatment sludge)	25 NA 9189

INFORMATION REQUIRED FOR STATE REPORTING

State Haz'd Wastes ST Waste Code	State Description of the hazardous waste code	Is this a Hazardous Waste in any State?
30	31	32 Y|N|P|
34	35	Chemical Abstract Number (Michigan only)
36	37	38

State Waste Permit Number (S. Carolina & Ill. only)	State Heading Information - Refer to permit (Illinois only)
40	41

SCA Generic Waste Code	Generic Waste Description (Illinois only)
42	43

Customer's Waste Code	Customer's waste description (How customer refers to waste)
44 N/A	45 SOLIDIFIED PIT SLUDGE

CHARACTERISTICS OF WASTE (EPA AND STATE REQUIREMENTS) . . . CIRCLE APPROPRIATE INFORMATION

Phase (51)

(S)	Solid
D	Sludge
L	Liquid
G	Gas

Toxicity Levels (52-55)

H	M	L	(N)	U	Inhalation
H	M	L	N	(U)	Dermal
H	M	(L)	N	U	Ingestion
H	M	L	(N)	U	Infectious

Hazard Levels (56-59)

H	M	L	(N)	U	Flammable
H	M	L	(N)	U	Reactive
H	M	L	(N)	U	Corrosive
H	M	(L)	N	U	Health

Memo area for Hazard/Toxicity Levels (60)

H=HIGH, M=MEDIUM, L=LOW, N=NONE OR NOT APPLICABLE, U=UNKNOWN

NFPA Hazard Identification System:

BASIC CHEMICAL ANALYSIS . . . CIRCLE APPROPRIATE INFORMATION . . . ENTER EXACT VALUES WHERE POSSIBLE

Specific Gravity (61)

1	< 0.8
2	0.8-1.0
(3)	1.0-1.2
4	1.2-1.4
5	1.4-1.7
6	> 1.7

Viscosity @ 70° F (62)

L	Low
M	Medium
(H)	High

Liquid Layering (70)

(N)	None
B	Bi Layer
M	Multi-

Dissolved Solids (wt %) (63)

(1)	< 5%
2	5-20%
3	> 20%

Suspended Solids (WT %) (64)

(1)	< 5%
2	5-20%
3	> 20%

Suspended Solid (Vol %) (71)

(1)	< 5%
2	5-20%
3	> 20%

Flash Point (closed) °F (65)

1	< 70
2	70-100
3	100-140
4	140-180
(5)	> 180

1000's of BTU's/lb (66)

(1)	< 1
2	1-5
3	5-9
4	9-12
5	12-16
6	16-20
7	> 20

Organic CL (WT %) (67)

(1)	None
2	Trace
3	< .5%
4	.5%-5%
5	5-10
6	10-20
7	20-30
8	> 30

Organic SULFUR (WT %) (68)

(1)	None
2	Trace
3	< .5%
4	.5-5%
5	> 5%

pH (69)

	< 2 Corr. Acid
	2-6 N.C. Acid
	6-8 Neutral
X	8-12 Alkaline
	> 12 Corr. Alk

ORGANIC WASTE COMPONENTS

Organic components of waste and amount of each component		Enter P if a percent, L if mg/L	Amount	P/L
	10 none detected		11	12
	13		14	15
	16		17	18
	19		20	21
	22		23	24
	25		26	27

INORGANIC WASTE COMPONENTS

Inorganic Components of waste and amount of each			Enter P if a percent, L if mg/L Amount					
Total CN	30	31 1.3	32 L	Sulfite as	33	34	35
Free CN	36	37	38		39	40	41
Sulfide as	42	43	44		45	46	47
Bi-sulfite as	48	49	50		51	52	53
	54 Bentonite Clay	55 25	56 P		57	58	59

HEAVY METALS

	Dissolved	P/L	Suspended	P/L		Dissolved	P/L	Suspended	P/L		Dissolved	P/L	Suspended	P/L
Ag	60	61	62	63	As	64	65	66	67	Be	68	69	70	71
Cd	72	73	74	75	Cr	76	77	78	79	Cu	80	81	82	83
Hg	84	85	86	87	Ni	88	89	90 7000	91 L	Pb	92	93	94	95
Se	96	97	98	99	Zn	100	101	102	103		104	105	106	107
	108	109	110	111		112		113	114		115	116	117	118
	119		120	121		122	123	124	125		126	127	128	129

Does this waste contain any radioactive, explosive, pyrophoric or shock sensitive material? Does this waste stream contain biologic material, pathogens, or etiological agents?

If yes to either question, explain: Chemical Services

Is the information provided based upon laboratory analysis of the waste material? Have you obtained toxicity studies of this waste stream? If so, please attach a copy of the results.

TRANSPORTATION INFORMATION FOR THIS W

Quantity per Delivery	U/M
~16	T

Container Bulk/Drum/Othr: bulk

Delivery Frequency: (1) One time; 2 Daily; 3 Weekly; 4 Bi-weekly; 5 Monthly; 6 Bi-monthly; 7 Quarterly; 8 Semi-annual

Transportation Required? 30: Y Yes; R On-Request; (N) No; 0 Only

Pick up Hours From To:

Unit of Measure (U/M) (wherever U/M used): P Lbs; (T) Tons; G Gallons; Y Cubic Yard; K Kilos; M Metric Tons; L Liters; C Cubic Meter

Transportation Memo Area. Describe Vehicle. Equipment needed. Safety Instructions, etc.

CERTIFICATION FOR COMPLETENESS ACCURACY AND TRUTHFULNESS IN THE PROVIDED INFORMATION

To the best of my knowledge and ability the information provided is complete, accurate and true.

Name (please print) C.R. Termini

Signature Jack Termini Title President Date 5/30/85

Comments:

SCA Chemical Services

SCA CHEMICAL SERVICES, INC. **WASTE PRODUCT SURVEY FORM**

APPENDIX D

Evaluation of Pollution Abatement Building Site

TERMINI ASSOCIATES
TECHNICAL CONSULTANTS

1965 Sheridan Drive
Buffalo, New York 14223
716-877-3155

EVALUATION OF POLLUTION ABATEMENT BUILDING SITE

Prepared for:

Mr. Richard Klimecko

J. H. WILLIAMS INC.

September 28, 1984

TERMINI ASSOCIATES

ORIGINAL SIGNED
C. R. Termini

C. R. Termini
President

Project Code: JH-227-013

TECHNICAL REPORT

1.0 INTRODUCTION

The J. H. Williams Company, Inc. intends to remove a pollution abatement facility and its underlying sumps presently located on the Vulcan Street site. The building was previously used to treat aqueous waste streams from metal plating operations prior to discharge to the Buffalo Sewer Authority treatment works. The installation of high technology equipment coupled with a steadily declining demand for chrome plated product led to the discontinued use of the abatement facility in 1981.

Phase I of the removal, dismantling the superstructure, was completed in July, 1984. Prior to demolition of the foundation and underlying treatment pits, J. H. Williams requested TERMINI ASSOCIATES to evaluate the soil and groundwater conditions beneath the building. The objective was to determine whether any metal plating wastes had migrated from the treatment sumps.

A plan of study was developed to address this objective and included retrieval of soil samples from beneath the existing reinforced concrete sump slab, assembly of data for interpretation of subsurface conditions, monitoring well installations, retrieval of ground water samples, analysis of soil and groundwater samples for heavy metals of concern and report preparation.

The existing waste treatment sump complex under study is located near the intersection of Kenmore Avenue and Vulcan Street in the City of Buffalo, New York. The structure is dimensioned in plan view approximately 20 by 40 feet. The structure is separated into four pits with all vertical interior and exterior walls and the base slab constructed of one-foot thick, reinforced concrete. The depth from the ground surface to the top of the base slab ranges from 9.5 to 10 feet.

TERMINI ASSOCIATES has retained Buffalo Drilling Company, Inc. (BDC) to undertake the subsurface explorations and interpretation of conditions beneath the treatment sump site. The geotechnical report prepared by BDC is appended to this document. For purposes of clarity and objectivity this document will only address investigations beyond the scope of services provided by BDC.

2.0 PURPOSE

The purposes of the ecological program include:

1.) Evaluation of soil cores for evidence of plating waste migration.
2.) Evaluation of groundwater samples for presence of toxic metal contaminants, resultant from either on-site or off-site activites.
3.) Accumulation of data supporting the regulatory delisting of the former pollution abatement facility as a RCRA T.S.D.F. (40CFR Part 265).

3.0 SAMPLES

Soil core samples were extracted from three core holes at the J. H. Williams site, 400 Vulcan Street, Buffalo, New York, 14207 by Buffalo Drilling Company, Inc. (BDC) personnel between August 1 and 3, 1984. The soil cores were received at TERMINI ASSOCIATES' facility on August 6, 1984 from Mr. James S. Barron, P.E. (BDC). Each sample was presented in three 6-inch sections labled respectively S-A, S-B, and S-C. A composite sample for each core hole location was prepared by combining 7-10 mm thick longitudinal slices from the three sections.

Groundwater samples were retrieved from three monitoring well installations at the J. H. Williams site on August 25, 1984 by Buffalo Drilling Company personnel utilizing a stainless steel bailer. Prior to each use, the bailer was rinsed with distilled water to reduce the possibility of cross contamination. The rinsings were not included with any samples. The sample containers provided contained pre-added aliquots of fixing agents to preserve sample integrity in accordance with prescribed EPA protocols. The groundwater samples were received at TERMINI ASSOCIATES' facility on August 25, 1984 from Mr. James S. Barron, P.E., (BDC).

The locations of the core holes and monitoring well installations providing samples are indicated on the site drawings included with the geotechnical report.

3.1 IDENTITY

The samples were assigned the following log numbers:

Sample Identity	Log Number	Date Sampled	Date Received
Core Hole B-1	40514	08/01/84	08/06/84
Core Hole B-2	40515	08/02/84	08/06/84
Core Hole B-3	40516	08/03/84	08/06/84
Monitoring Well #1	40590	08/25/84	08/25/84

Sample Identity	Log Number	Date Sampled	Date Received
Monitoring Well #2	40591	08/25/84	08/25/84
Monitoring Well #3	40592	08/25/84	08/25/84

4.0 RESULTS

The data obtained by analysis of the above listed samples are presented in Tables I, II, and III. Table I lists the EP Toxicity results for the soil core samples. Table II gives the groundwater EP Toxicity results. The results of all additional testing conducted on these samples are provided in Table III.

4.1 EP TOXICITY - Title 40, CFR, Part 261.24

The data presented in Table I lists the concentration of toxic metal contaminants in a leachate generated from the composite core samples. The data provided in Table II are the concentrations of toxic metal contaminants in the groundwater samples. Consistent with the test protocol specified in 40 CFR Part 261, the groundwater samples were treated as naturally occurring leachates. Based on a knowledge and understanding of the samples, no organic pesticide contaminants were investigated.

5.0 METHODOLOGY

The above samples were tested according to procedures specified in Title 40, Code of Federal Regulations, Part 261.

6.0 DECLARATION

The above soil core samples (Log Numbers 40514, 40515, and 40516) collected from August 1 to August 3, 1984 and the groundwater samples (Log Numbers 40590, 40591, and 40592) collected on August 25, 1984, when analyzed according to the procedures established in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (EPA SW-846, August, 1982) do NOT EXHIBIT the hazardous waste characteristic of EP Toxicity.

7.0 CONCLUSION

The results of all testing conducted on the soil core samples do not provide any evidence of toxic plating waste leakage from the pollution abatement sumps. The groundwater sample results also do not indicate any occurrence of toxic metal migration either from activities conducted on-site by J. H. Williams or off-site by other operations. Although the abatement facility has not been in use since 1981, the alkaline soil conditions encountered immediately below the sump structure would have most likely complexed any toxic

metal leakage had it occurred and allowed its discovery in this study. Regarding the future disposition of this site the existence of a 30 foot thick clay layer with limited estimated permeability should be noted for its capability as a barrier to potential chemical migration.

TABLE I

EP TOXICITY (METALS ONLY)
SOIL CORE SAMPLES

Parameter / Log Number	Core B-1 40514	Core B-2 40515	Core B-3 40516	EPA Limit
Arsenic, mg/L	0.004	0.008	0.007	5.0
Barium, mg/L	0.013	0.029	0.033	100.0
Cadmium, mg/L	0.007	0.019	0.014	1.0
Chromium, mg/L	0.014	0.005	0.009	5.0
Lead, mg/L	< 0.001	< 0.001	< 0.001	5.0
Mercury, mg/L	< 0.001	< 0.001	< 0.001	0.2
Selenium, mg/L	0.004	0.009	0.016	1.0
Silver, mg/L	< 0.001	< 0.001	< 0.001	5.0

TABLE II

EP TOXICITY (METALS ONLY)
GROUNDWATER SAMPLES

Parameter / Log Number	Well #1 40590	Well #2 40591	Well #3 40592	EPA Limit
Arsenic, mg/L	0.003	< 0.001	< 0.001	
Barium, mg/L	0.048	0.059	0.040	
Cadmium, mg/L	< 0.001	< 0.001	< 0.001	
Chromium, mg/	0.003	0.010	0.003	
Lead, mg/L	0.002	0.003	0.003	
Mercury, mg/L	< 0.0002	< 0.0002	< 0.0002	
Selenium, mg/L	0.001	< 0.001	< 0.001	
Silver, mg/L	< 0.001	< 0.001	< 0.001	

TABLE III

ADDITIONAL TESTING

SOIL CORE SAMPLES

Parameter / Log Number	Core B-1 40514	Core B-2 40515	Core B-3 40516
Copper, mg/L (leachate)	0.034	0.044	0.024
Nickel, mg/L (leachate)	0.050	0.160	0.210
Initial pH, 5% slurry, S.V.	8.90	8.885	8.72
Moisture, %	16.2	16.5	16.9

GROUNDWATER SAMPLES

Parameter / Log Number	Well #1 40590	Well #2 40591	Well #3 40592
Copper, mg/L	0.034	0.089	0.061
Nickel, mg/L	< 0.010	< 0.010	< 0.010

APPENDIX A

1. "Geotechnical Report for Evaluation of Pollution Abatement Site at J. H. Williams Plant, Buffalo, New York", Buffalo Drilling Company, September 11, 1984.

BUFFALO ◈ DRILLING ◈ COMPANY INC.

1965 Sheridan Drive
Kenmore, New York 14223
(716)-875-0906

foundation test borings
rock coring • monitoring wells
geotechnical instrumentation
construction dewatering

GEOTECHNICAL REPORT
for
EVALUATION OF POLLUTION ABATEMENT BUILDING SITE
at
J.H. WILLIAMS PLANT, BUFFALO, NEW YORK

Submitted to:
Termini Associates

Prepared by:
James S. Barron, PE

September 11, 1984
Job No. 84-141

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 General

This report presents the results of subsurface explorations and interpretation of conditions beneath a former waste treatment sump site at the J.H. Williams Plant in Buffalo, New York.

Termini Associates of Buffalo, New York, through J.H. Williams, has retained Buffalo Drilling Company, Inc. (BDC) to undertake efforts outlined in a proposal dated June 26, 1984. The overall responsibilities of BDC included retrieval of soil samples from beneath the existing reinforced concrete sump slab, assembly of data for interpretation of subsurface conditions, monitoring well installations, and report preparation.

The existing waste treatment sump pit under study is located near the intersection of Vulcan Street and Kenmore Avenue in the Town of Tonawanda, New York. The existing structure is dimensioned approximately 20 feet by 40 feet in plan view. The structure is separated into four sumps with all vertical interior and exterior walls and the base slab constructed of one-foot thick, reinforced concrete. The depth from the ground surface to the top of the base slab is about 10 to 12 feet.

1.2 Purpose and Scope

The purposes of the geotechnical program include:

1. Evaluation of subsurface conditions at the existing sump site;
2. Retrieval of soil and water samples for subsequent laboratory analyses.

The scope of services undertaken to achieve the above-noted purposes include:

1. Provision for retrieving three soil samples from beneath the reinforced concrete base slab;
2. Auger drilling and retrieval of soil samples for three test borings drilled to refusal;
3. Continuous observation and documentation of drilling efforts by an experienced geologist;
4. Installation of ground water monitoring wells, well development, and retrieval of water samples;

5. Visual classification of soil samples and preparation of boring logs;
6. Evaluation of subsurface conditions and preparation of a report.

2.0 FIELD EXPLORATIONS AND MONITORING WELL DETAILS

2.1 General

Three test borings to refusal and three holes were diamond drilled through the sump base slab. All borings and core holes were located in the field and ground surface elevations determined by BDC personnel. As noted on Figure 1, entitled Boring Location Plan, the boring locations and elevations are referenced to an existing fire hydrant located approximately 20 feet from the sump building.

Ground water monitoring wells were installed in each boring. Following the development process for each well, a water sample was retrieved from each with a stainless steel bailer. Water samples were placed in prepared containers as provided by Termini Associates. Subsequently, the water samples were laboratory tested under the supervision of Termini Associates.

2.2 Base Slab Cores and Soil Samples

As noted on Figure 1, three cores located in separate compartments of the overall sump structure were diamond drilled through the approximate one-foot thick, reinforced concrete base slab. Following core removal, a standard split-barrel soil sampler was driven with a 12-pound sledge to an approximate 18-inch depth as measured from the slab bottom. The retrieved soil samples were separated into six-inch long sections and placed in sealed jars. The upper portion of each sample was identified as sample section A and the bottom as sample section C.

The slab coring operation and retrieval of soil samples were done between August 1 and 3, 1984. The soil samples were transmitted to Termini Associates on Monday, August 6, 1984.

2.3 Subsurface Explorations

The previously noted three test borings were drilled using a truck-mounted CME-55 rotary drill rig. Drilling operations were done under the continuous observation of an experienced geologist between August 10 and 21, 1984. All test borings were drilled using 3-3/4 inch inside diameter (ID) continuous-flight hollow-stem augers. Test borings are located as noted on Figure 1 and the logs are included as Appendix A.

As noted on the logs, continuous and standard sampling procedures were used. Soil samples were recovered by driving a standard split-spoon sampler (2 feet long by 1-3/8 inch ID) 24 inches using a 140 pound hammer falling 30 inches each blow (ASTM D1586). The number of blows to drive the sampler was recorded at 6-inch intervals. The number of blows required for 12 inches of penetration is defined as the Standard Penetration Test N-value. All borings were drilled to refusal which is inferred to be top of bedrock. Refusal was taken to be the depth at which there was no measurable advancement with the rotating augers.

Soil samples were initially classified in the field, and a portion of each sample was placed and sealed in a glass jar. The boring logs, included as Appendix A, were prepared based on the field log and a second visual classification of the retained samples. Classification of soil samples is based on the Unified Soil Classification System. Refer to Figure 3, entitled Geotechnical Reference Standards, for an explanation of the terminology used for soil descriptions.

2.4 Ground Water Monitoring Wells

Monitoring wells were installed in all borings with the well tip set near the bedrock surface. Single point wells were installed consisting of 1-1/2 inch ID schedule 80 PVC riser pipe and 5-foot long slotted PVC well screen. The tip or screen, with .01 inch slot width, was backfilled with a uniform #2 Q-rock and a minimum 2-foot thick bentonite seal placed above. The wells were backfilled above the bentonite seal with a prepared sand and grout mixture and a 6-inch diameter 3-foot long protective casing installed at the surface. Monitoring well installation schematics are presented as Figures 2A through 2C.

Following completion of the monitoring well installations, each well was developed by surging and continuous pumping efforts between August 22 and 24, 1984. Subsequently, the wells were bailed and a water sample retrieved from each for laboratory analyses on Saturday, August 25. Water samples were taken using a 3/4 inch diameter, 3-foot long, stainless steel bailer. Prior to each use, the bailer was washed with distilled water to reduce the possibility of cross hole contamination. The retrieved water samples were placed in prepared, air-tight jars provided by Termini Associates. All water samples were submitted to Termini Associates on Monday, August 27, 1984.

3.0 DISCUSSION OF SUBSURFACE CONDITIONS

3.1 General

As noted on the logs included as Appendix A, the subsurface conditions are interpreted as consisting of three primary soil layers overlying bedrock. Beneath a thin veneer of fill, the conditions change from an approximate 20 foot thick silt layer to clay which extends to about a 60-foot depth. Below the clay layer, a layer of sand and gravel exist to the bedrock surface. Bedrock is inferred to be about 72 feet beneath the ground surface.

3.2 Subsurface Conditions

The upper silt layer is described as reddish brown, stiff and grading from non-plastic near the ground surface to moderately plastic at an approximate 15 foot depth. The silt is noted to be very stiff and intermixed with small amounts of gravel and sand. The estimated permeability of the silt layer is between 10^{-4} and 10^{-6} centimeters per second.

Beneath the silt layer and beginning at an approximate 20-foot depth, a 40-foot thick clay layer was identified by all borings. The clay is described as reddish brown, stiff and moderately plastic to plastic. The clay layer is noted to contain trace amounts (less than 10%) of sand and gravel, and the permeability is estimated to be less than 10^{-7} centimeters per second.

Extending from beneath the clay layer to the bedrock surface, a dense to very dense sand and gravel layer was found by each boring. This approximate 10-foot thick layer is very permeable and the only encountered aquifer overlying bedrock at the site. The screens of all monitoring wells were placed in this aquifer and sealed above the clay interface.

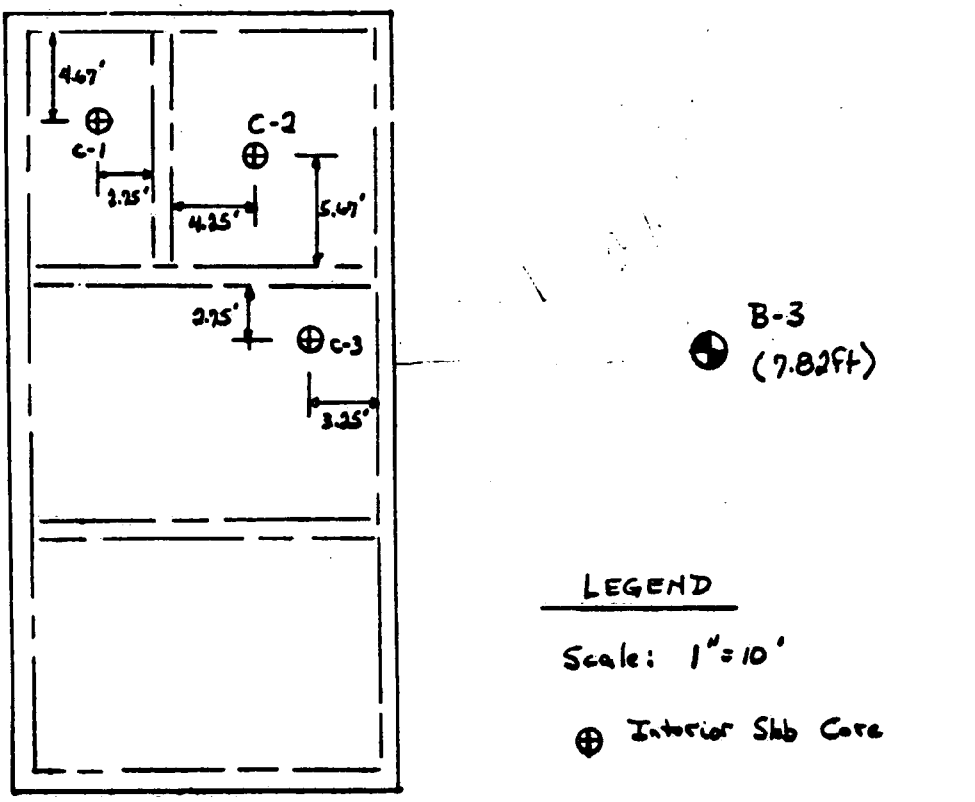
The natural ground water depth as measured following the monitoring well installations is between 32 and 35 feet beneath the ground surface. Refer to the boring logs and monitoring well schematics for additional details.

Figures

BY JSB DATE 8-29-84
CHKD. BY ..... DATE .....

SUBJECT JH Williams Plant - Environmental Study of Inactive Sump Building

SHEET NO. ..... OF .....
JOB NO. 84-141
Fig. No. 1



LEGEND

Scale: 1" = 10'

⊕ Interior Slab Core

◒ Test Boring and Monitoring Well Location
( ) ground surface elevation

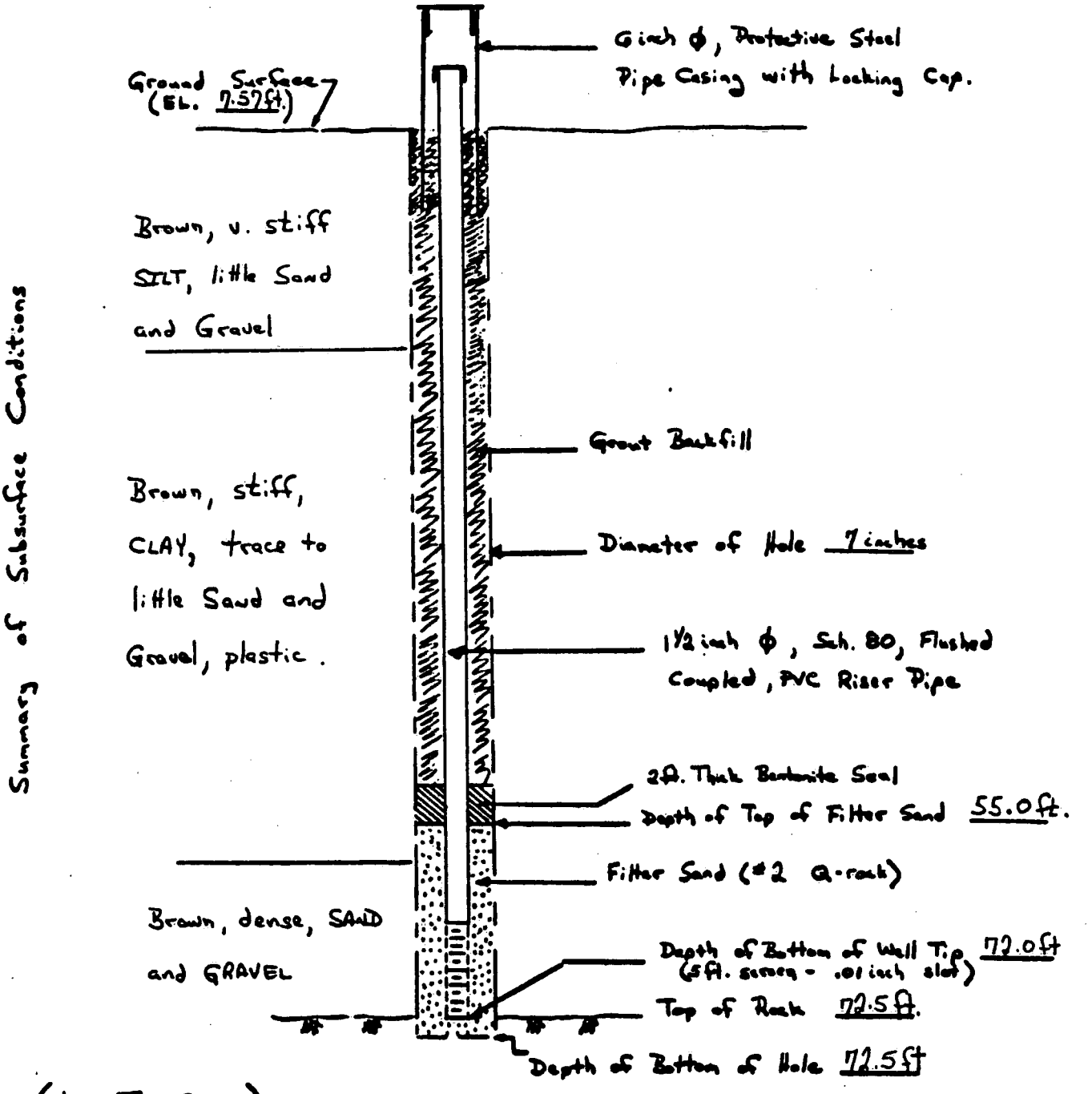
△ Hydrant Location

BORING LOCATION PLAN

BY JSB DATE 9.3.84 SUBJECT Environmental Studies - J.H. Williams Plant, Buffalo, N.Y. SHEET NO. 1 OF 3
CHKD. BY ..... DATE ..... JOB NO. 84-141
Figure 2A.

OBSERVATION WELL INSTALLATION REPORT

(Observation Well Number B-1)

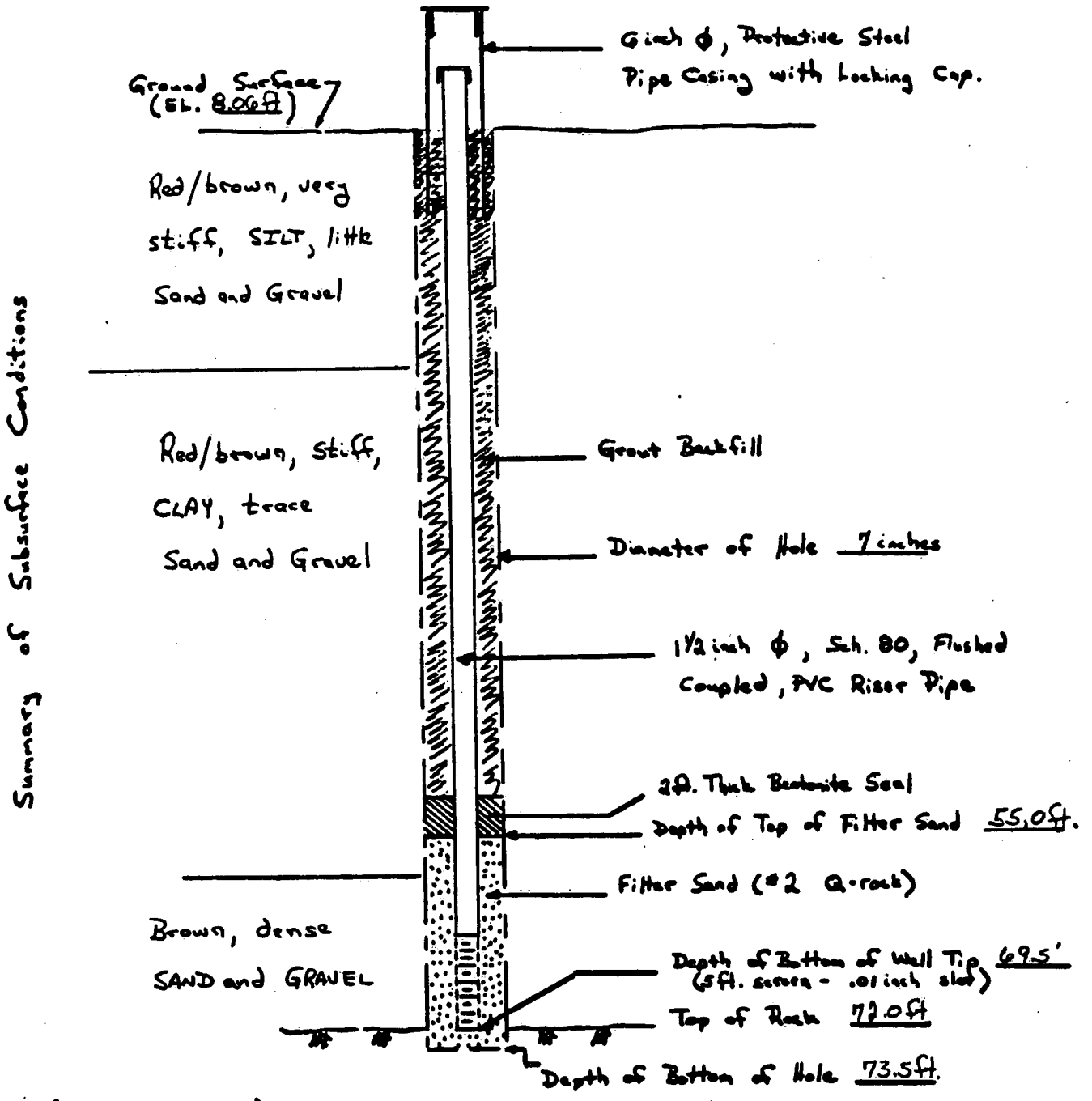


(Not To Scale)

Installation Date: 8·13·84
Location: refer to Fig. 1
Ground Surface Elevation: 7.57 ft.

Observation Well Installation Report

(Observation Well Number B-2)



(Not To Scale)

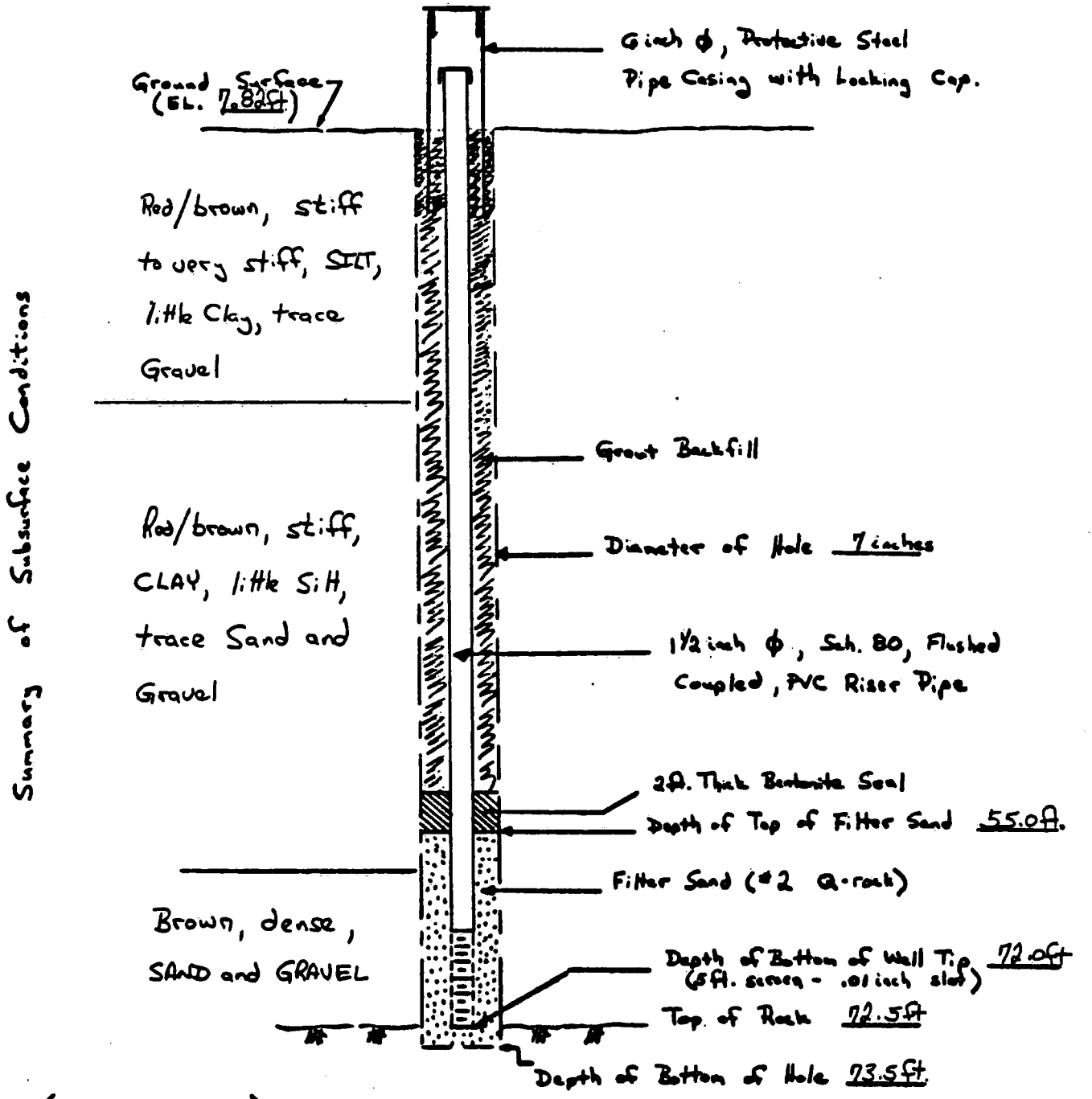
Installation Date: 8.15.84

Location: refer to Fig. 1

Ground Surface Elevation: 8.06 ft

Observation Well Installation Report

(Observation Well Number B-3)



(Not To Scale)

Installation Date: 8.21.84
Location: refer to Fig. 1
Ground Surface Elevation: 7.82 ft.

TERMINOLOGY USED FOR SOIL DESCRIPTIONS

Key to Density & Consistency Description of Granular & Cohesive Soils

Number of Blows per ft., N	Relative Density	Number of Blows per ft., N	Consistency
		Below 2	Very soft
0-4	Very loose	2-4	Soft
4-10	Loose	4-8	Medium
10-30	Medium	8-15	Stiff
30-50	Dense	15-30	Very stiff
Over 50	Very dense	Over 30	Hard

Description of Percentage or Proportions Used in Soil Sample Classification		Abbreviations Used in Soil Sample Classification	
Trace	0-10%	f - fine	v - very
Little	10-20%	m - medium	gr - gray
Some	20-35%	c - coarse	br - brown
And	35-50%	f/m - fine to medium	yel - yellow
		f/c - fine to coarse	

Notes:

1. Description and classifications are based on visual inspection of samples and boring operations.
2. The stratum lines shown on the boring logs are based upon interpretation and may not represent precise subsurface conditions.
3. Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. Fluctuations in the groundwater level may occur due to other factors than those present at the time measurements were made.
4. The Standard Penetration Test N-value, as specified by ASTM D-1586, is defined as the number of blows required by a 140-pound hammer falling 30 inches each blow to drive a 2-inch outside diameter split spoon sampler 12 inches.

SOIL CLASSIFICATION CHART
(Unified Soil Classification System)

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS More than 50% of material larger than No. 200 sieve	GRAVELS More than 50% of coarse fraction larger than No. 4	Clean Gravels (little or no fines)		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
		Gravels with appreciable amounts of fines		GM	Silty gravels, gravel-sand-silt mixtures
				GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS Less than 50% of coarse fraction larger than No. 4 sieve	Clean Sands (little or no fines)		SW	Well-graded sands, gravelly sands, little or no fines
				SP	Poorly-graded sands, gravelly sands, little or no fines
		Sands with appreciable amounts of fines		SM	Silty sands, sand-silt mixtures
				SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS Less than 50% of material larger than No. 200 sieve	SILTS AND CLAYS Low plasticity Liquid Limit < 50%			ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity gravelly clays, sandy clays, silty clays, lean clays
				OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS High Plasticity Liquid Limit 50%			MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts
	Highly Organic Soils			Pt	Peat, humus, swamp soils with organic contents
	Miscellaneous Fill			FILL	Miscellaneous fill may belong in any division but is identified as FILL

GEOTECHNICAL REFERENCE STANDARDS

Figure 3

Appendix A

Boring Logs

FIELD BORING LOG

BUFFALO DRILLING COMPANY, INC.
1965 Sheridan Drive
Kenmore, New York 14223

Client: Termini Associates
Project: J. H. Williams
File No.: 84-141 Boring No.: B-1

Driller: Daryl Altrogge
Type of Drill Rig: CME-55
Sampling Method: ASTM D-1586
Size & Type of Bit: 3-3/4 in. F.D. augers

Surface Elevation: 7.57 ft.
Datum: Reference to adjacent hydrant
Location: See sketch
Date Started: 8/10/84 Completed: 8/13/84

Overburden Samples: Disturbed: 15 Undist.:
Total Depth of Hole: 72.5 ft.
Depth Drilled into Rock: 0 ft.

Top of Rock Elevation: -64.9 ft.
Bottom of Hole Elevation: - 64.9 ft.
Ground Water Depth: 34 ft.

Depth (ft.)	Blows per .5 ft.		Sample No.	N	% Rec (RQD)	SOIL AND ROCK DESCRIPTION	REMARKS
1	-	3	S-1	8	0	6" asphalt: no sample recovered	S-1: 0-2'
	5	6					
5	6	8	S-2	19	0	No sample recovered	S-2: 4-6'
	11	14					
10	9	10	S-3	25	75	Brown, very stiff, SILT, some f/c Gravel, little f/c Sand, moist, (ML)	S-3 9-11'
	15	7					
15	5	7	S-4	20	75	Same as S-3	S-4: 14-16'
	13	19					
20	4	4					

Notes:

FIELD BORING LOG

BUFFALO DRILLING COMPANY, INC.
1965 Sheridan Drive
Kenmore, New York 14223

Client Termini Associates
Project J. H. Williams
File No. 84-141 Boring No. B-1

Depth (ft.)	Blows per .5 ft.	Sample No.	N	% Rec (RQD)	SOIL AND ROCK DESCRIPTION	REMARKS
21	5 7	S-5	9	100	Brown, stiff, CLAY, some f/m Gravel, little Silt, trace f/m Sand, plastic, moist (CL)	S-5: 19-21'
25	5 6 / 8 9	S-6	14	100	Same as S-5.	S-6: 24-26'
30	6 5 / 8 7	S-7	13	100	Same as S-5.	S-7: 29-31'
35	3 3 / 3 7	S-8	6	100	Brown, medium soft, CLAY, trace Sand, moist, plastic (CL)	S-8: 34-36'
40	2 3 / 6 7	S-9	9	100	Brown, stiff, CLAY, some c. Sand, trace f/m Gravel, moist, plastic (CL)	S-9: 39-41'
45	3 3 / 5 7	S-10	8	100	Brown, medium stiff, CLAY, trace Sand, high plasticity, moist (CH)	S-10 44-46'

Notes:

FIELD BORING LOG

BUFFALO DRILLING COMPANY, INC.
1965 Sheridan Drive
Kenmore, New York 14223

Client Termini Associates
Project J. H. Williams
File No. 84-141 Boring No. B-1

Depth (ft.)	Blows per .5 ft.		Sample No.	N	% Rec (RQD)	SOIL AND ROCK DESCRIPTION	REMARKS
50	4	4	S-11	8	100	Same as S-10	S-11: 49-51'
	4	4					
55	2	3	S-12	10	100	Same as S-10.	S-12: 54-56'
	7	9					
60	4	5	S-13	12	100	Brown, medium dense, f. SAND, some Silt, little Clay, wet (SM-SC)	S-13: 59-61'
	7	12					
65	40	40	S-14	86	100	Brown, very dense, f/c SAND and f/c GRAVEL, wet (SW)	S-14: 64-66'
	46	66					
70	37	23	S-15	56	100	Brown, very dense, f/c SAND and f/c GRAVEL, wet (SW-GW).	S-15: 69-71'
	33	40					
						Bottom of Hole 72.5 ft. (Refusal with auger)	

Notes:

FIELD BORING LOG

BUFFALO DRILLING COMPANY, INC.
1965 Sheridan Drive
Kenmore, New York 14223

Client: Termini Associates
Project: J.H. Williams
File No.: 84-141 Boring No.: B-2

Driller: Daryl Altrogge
Type of Drill Rig: CME-55
Sampling Method: ASTM D-1586
Size & Type of Bit: 3-3/4 in. ID augers

Surface Elevation: 8.06 ft.
Datum: Reference to adjacent hydrant
Location: See sketch
Date Started: 8/14/84 Completed: 8/16/84

Overburden Samples: Disturbed: 29 Undist.:
Total Depth of Hole: 73.5 ft.
Depth Drilled into Rock: 1.5 ft.

Top of Rock Elevation: -63.9 ft.
Bottom of Hole Elevation: -65.4 ft.
Ground Water Depth: 32 ft.

Depth (ft.)	Blows per .5 ft.		Sample No.	N	% Rec (RQD)	SOIL AND ROCK DESCRIPTION	REMARKS
1	5	3	S-1	4		Black, f/c Sand, little f/m Gravel, tr. organics, wet (Fill).	S-1: 0-2'
	1	1					
	2	3	S-2	7		Red/brown, loose, SILT, some f/c Gravel, wet (ML).	S-2: 2-4'
	4	7					
5	10	9	S-3	25		Red/brown, very stiff, SILT, trace f. Sand, wet (ML).	S-3: 4-6'
	16	20					
	11	14	S-4	38		Same as S-3	S-4: 6-8'
	24	28					
	9	16	S-5	34		Same as S-3	S-5: 8-10'
10	18	25					
	12	13	S-6	33		Same as S-3	S-6: 12-14'
	20	24					
15	10	12	S-7	32		. . .grade: slight plasticity	S-7: 14-16'
	20	20					
	5	9	S-8	19		Same as S-7.	S-8: 16-18'
	10	16					
	6	8	S-9	18		Same as S-7.	S-9: 18-20'
20	10	13					

Notes:

FIELD BORING LOG

BUFFALO DRILLING COMPANY, INC.
1965 Sheridan Drive
Kenmore, New York 14223

Client Termini Associates
Project J.H. Williams
File No. 84-141 Boring No. B-2

Depth (ft.)	Blows per .5 ft.	Sample No.	N	% Rec (RQD)	SOIL AND ROCK DESCRIPTION	REMARKS
21						
	5 5	S-10	12		Red/brown, stiff, CLAY, some Silt, trace f/c Sand and f/m Gravel, wet (CL).	S-10: 22-24'
	7 7					
25	4 4	S-11	10		Same as S-10.	S-11: 24-26'
	6 7					
	4 5	S-12	11		Same as S-10.	S-12: 26-28'
	6 7					
	5 8	S-13	17		Same as S-10.	S-13: 28-30'
	9 9					
30						
	3 5	S-14	11		Same as S-10.	S-14: 32-34'
	6 8					
35						
	3 3	S-15	6		. . .grade: medium stiff	S-15: 36-38'
	3 3					
	3 4	S-16	8		Same as S-15.	S-16: 38-40'
	4 3					
40						
	2 2	S-17	6		Same as S-15.	S-17: 40-42'
	4 4					
	WH 2	S-18	4		Same as S-15.	S-18: 42-44'
	2 4					
	4 3	S-19	6		Same as S-15.	S-19: 44-46'
45	3 6					
	4 3	S-20	7		Same as S-15.	S-20: 46-68'
	4 2					
	3 4					

Notes:

FIELD BORING LOG

BUFFALO DRILLING COMPANY, INC.
1965 Sheridan Drive
Kenmore, New York 14223

Client: Termini Associates
Project: J.H. Williams
File No.: 84-141 Boring No.: B-2

Depth (ft.)	Blows per .5 ft.		Sample No.	N	% Rec (RQD)	SOIL AND ROCK DESCRIPTION	REMARKS
50	5	7	S-21	9		Same as S-15.	S-21: 48-50'
	1	2	S-22	8		Same as S-15.	S-22: 52-54'
	6	4					
55	2	3	S-23	8		Same as S-15.	S-23: 54-56'
	5	6					
	3	3	S-24	6		Same as S-15.	S-24: 56-68'
	3	4					
	6	6	S-25	16		Light brown, medium dense, f. SAND, little Silt, tr. Clay, wet (SM).	S-25: 58-60'
60	10	9					
	12	36	S-26	82		Light brown, very dense, f. SAND and f/c Gravel, wet (SW-GM).	S-26: 62-64'
	46	46					
65	30	45	S-27	100		Same as S-26.	S-27: 64-66'
	55	55					
	21	25	S-28	56		Same as S-26.	S-28: 66-68'
	31	35					
	17	18	S-29	53		Same as S-26.	S-29: 68-70
	35	-					
70							Auger refusal at 72 ft.
						Top of Rock at 72 ft.	
75						Bottom of Hole - 73.5 ft.	Drilled rock with roller bit to 73.5 ft.

Notes:

FIELD BORING LOG

BUFFALO DRILLING COMPANY, INC.
1965 Sheridan Drive
Kenmore, New York 14223

Client: Termini Associates
Project: J.H. Williams
File No.: 84-141 Boring No.: B-3

Driller: Daryl Altrogge
Type of Drill Rig: CME-55
Sampling Method: ASTM D-1586
Size & Type of Bit: 3-3/4 in. ID augers

Surface Elevation: 7.82 ft.
Datum: Reference to adjacent hydrant
Location: See sketch
Date Started: 8/17/84 Completed: 8/21/84

Overburden Samples: Disturbed: 17 Undist.:
Total Depth of Hole: 73.5 ft.
Depth Drilled into Rock: 1.5 ft.

Top of Rock Elevation: -65.7 ft.
Bottom of Hole Elevation: -65.7 ft.
Ground Water Depth: 33 ft.

Depth (ft.)	Blows per .5 ft.		Sample No.	N	% Rec (RQD)	SOIL AND ROCK DESCRIPTION	REMARKS
1						8" Asphalt	Augered without sampling to 4.0'
5	5	7	S-1	17		Red/brown, stiff, SILT, little Clay, tr. f/m Gravel, slight plasticity, moist (ML).	S-1: 4-6'
	10	18					
10	14	22	S-2	46		Same as S-1	S-2: 10-12' (high blow count due to cobbles).
	24	27					
15	6	6	S-3	15		. . . grade: plastic	S-3: 14-16
	9	10					
20	3	4					

Notes:

FIELD BORING LOG

BUFFALO DRILLING COMPANY, INC.
1965 Sheridan Drive
Kenmore, New York 14223

Client Termini Associates
Project J.H. Williams
File No. 84-141 Boring No. B-3

Depth (ft.)	Blows per .5 ft.		Sample No.	N	% Rec (RQD)	SOIL AND ROCK DESCRIPTION	REMARKS
21	5	6	S-4	9		Red/brown, stiff, CLAY, some Silt, trace f/c Sand and f/m Gravel, moist, moderately plastic, (CL).	S-4: 19-21'
25	4	9	S-5	15		Same as S-4	S-5: 24-25'
	6	9					
30	4	6	S-6	12		Same as S-4	S-6: 29-31'
	6	8					
	3	4	S-7	9		Same as S-4	S-7: 32-34'
	5	6					
35	2	4	S-8	8		Red/brown, stiff, CLAY, little Silt, trace f/c Sand and f/m Gravel, wet, plastic (CL)	S-8: 34-36'
	4	4					
	2	3	S-9	6		Same as S-8	S-9: 36-38'
	3	4					
	2	3	S-10	6		Same as S-8	S-10: 38-40'
40	3	3					
	2	3	S-11	7		Same as S-8	S-11: 42-44'
	4	6					
45							
	3	4	S-12	9		Same as S-8	S-12: 47-49'
	5	4					

Notes:

FIELD BORING LOG

BUFFALO DRILLING COMPANY, INC.
1965 Sheridan Drive
Kenmore, New York 14223

Client Termini Associates
Project J.H. Williams
File No. 84-141 Boring No. B-3

Depth (ft.)	Blows per .5 ft.		Sample No.	N	% Rec (RQD)	SOIL AND ROCK DESCRIPTION	REMARKS
50							
	4	4	S-13	8		Same as S-8	S-13: 52-54'
	4	4					
55							
	2	4	S-14	8		Same as S-8	S-14: 57-59'
	4	4					
	2	4	S-15	10		Light brown, loose to medium dense f/c SAND, some Clay, trace f/m Gravel, wet, slight plasticity (SC)	S-15: 59-61'
60	6	6					
	20	45	S-16	100+		Light brown, very dense, f/c SAND and f/c Gravel, little SILT, wet (SM-GM)	S-16: 64-66'
65	100	-					
	41	51	S-17	100+		Light brown, very dense, f/c GRAVEL and f/c Sand, trace gypsum, wet (GW)	S-17: 69-71'
70	50	53					
75						Bottom of Hole - 73.5 ft.	Refusal with augers.

Notes:

Appendix B

Elevation Survey Data

BY JSB DATE 9:5:84 SUBJECT J.H. Williams - Environmental Study of Inactive Sump Building SHEET NO. ..... OF .....
CHKD. BY ..... DATE ..... JOB NO. 84-141 Appendix B

Elevation Survey Data Summary

NOTE: The elevation survey is referenced to the top nut of the center hydrant located near the southwest corner of the sump building. Refer to the Boring Location Plan, Figure No. 1.

	Reading	Reference Elevation
Hydrant	2.54'	10.00'
B-1 ground	4.97'	7.57'
well top	3.54'	9.00'
B-2 ground	4.48'	8.06'
well top	3.05'	9.49'
B-3 ground	4.72'	7.82'
well top	4.65'	7.89'

NUS CORPORATION AND SUBSIDIARIES — TELECON NOTE

CONTROL NO:	DATE:	TIME:
	5-20-87	1400

DISTRIBUTION: TRW/JH Williams Division

BETWEEN:	OF:	PHONE:
Laurie	Buffalo Sewer Authority	(716) 855-4664

AND: Randy Rice

DISCUSSION:

I spoke with Laurie who informed me that the only sewage disposal treatment plant for Buffalo is located at the foot of West Ferry Street on Bird Island at the mouth of the Buffalo River.

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES — TELECON NOTE

CONTROL NO:	DATE: 5-20-87	TIME: 1500

DISTRIBUTION: TRW/JH Williams Division

BETWEEN: Jim Caruso	OF: Buffalo Sewer Authority Treatment Plant	PHONE: (716) 883-1820

AND: Randy Rice

DISCUSSION:

I spoke with Jim Caruso, Plant Chemist/Manager of the Buffalo Sewer Treatment Plant on Bird Island in the Niagara River. Jim informed me that there have been no problems with sewer water from Vulcan Street and Kenmore Avenue drains ever since the closing of J.H. Williams. He told me, that while they were in operation, J.H. Williams were disposing of cyanide and a heavy metals sludge into the city storm drains of that drea. But since they closed, there have been no further sewer water problems in that vicinity.

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE: 5-20-87	TIME: 1600

DISTRIBUTION: TRW/JH Williams Division

BETWEEN: Water Division Treatment Plant	OF: Buffalo Public Works	PHONE: (716) 855-4766

AND: Randy Rice

DISCUSSION:

I spoke with maintenance at the Treatment Plant located at LaSalle Park on the mouth of the Niagara River. I was told that Vulcan Street is a city boundary line for Buffalo. South of Vulcan Street is Buffalo. North of Vulcan Street is Tonawanda. Therefore, the JH Williams mill, being on the north side of the street, receives its drinking water from the Tonawanda treatment plant located at the foot of Sheridan Drive. (one mile north of Vulcan Street.) This treatment plant is a point one mile downstream from possible surface water contamination into the Niagara River.

ACTION ITEMS:

NUS 067 REVISED 0685

1972 Erie Nies.
Comp. Solid Waste Survey

(187) Niagara Mohawk Power Corp. North Tonawanda - Niag

Emp 51 SIC 3999 *

Paper .02
Misc. .02
Other 2.0
2.04 = 106 T/yr } Own Removal to City Sewer

Cost 4,050.00/yr. Yes

---

(188) Niagara Mohawk Power Corp. Buffalo - Erie

Emp [illegible] SIC 3799

Paper .80 Negligible
Rubber .30 Negligible
Metals 28.00 Negligible
Misc. 16.55 Own Removal

45.65 = 2,420 T/yr.

Cost 460.000/yr. Yes

---

(189) Williams, J.H. & Company. Town Tonawanda - Erie

Emp. 1,250 SIC 3390.

Paper	104	cy/wk =	7,80 T/wk.	} Private Contractor to Masonry.
Wood	22	" =	5,50 "	
Plastics	1	" =	.20 "	
Metals	15	" =	7,50 "	
Glass	1	" =	.75 "	
Trade Inerts	5	" =	5,00 "	
			26.75	= 1,390 T/yr = 1.11 T/emp

Cost 16,000.00/yr No - too expensive

---

(190) International Minerals and Chemical Corp. Niagara Falls - Niag

Emp. 100 SIC 2812

Paper 4.0
Wood .5
Metals .5
5.0 = 260 T/yr = 2.6 T/emp/yr. } Private Contractor

Cost [illegible] Yes

or Phone Visit 10/21/76 by DHC. Address 400 Vulcan St
ollow-up / / by Buffalo, NY 14207
orm Completed / / by County Erie Phone 716-875-3200
omments: (1400) Mach. hand tools, machine SIC Codes 1. 3423 3.
Imp tools, Stock forgings, Forgings to order 2. 4.
Steel Cutting. 4/3/78

Mr. Schleyer
Mr. Dick Klimecko

New York State Hazardous Waste Survey
Department of Environmental Conservation
Division of Solid Waste Management (518) 457-3691
50 Wolf Road, Albany, N.Y. 12233 Telephone: ~~(518) 457-0685~~ Randy P.

General Information

1. Company Name J H. Williams Div. of TRW

Mailing Address 400 Vulcan St. (Street) Buffalo, (City) NY. (State) 14207 (Zip)

Plant Location [V] Same as above

(Street) (City) (State) (Zip)

2. If Subsidiary, Name of Parent Company TRW

3. Individual Responsible for Plant Operations John Haynes (Name)

General Mgr. (Title) 875-3200 (Phone)

4. Individual Providing Information Mr. Richard ~~Klimecko~~ Klimecko w/ (Name)

Project Engineer (Title) (Phone)

5. Department of Environmental Conservation Interviewer Dave Blackenbush

6. Standard Industrial Classification (SIC) Codes for Principal Products

Group Name	SIC Code (4 Digit)	Approximate % of / Production	/ Value Added
a. Hand & Edge Tools, except Machine & Saw Blades and Hand Saws	3423	100	
b.			
c.			
d.			

7. Processes Used at Plant
a. Black oxide - Anodizing
b. Plating - Hc - Zn Ni Ct.
c. Cleaning, degreasing
d. - Spray Painting
e. Forging, grinding

8. Products (annual 1000
a. Hand Tools
b. Custom Forgings
c.
d.
e.

1. Potentially hazardous materials used in manufacturing or produced as products:

a. Cutting oils Mobil Met
b. Hyd Soluble
c. Chlorinated
d. Acids bases (HCl, HNO_3, H_2SO_4)
e. Paint - Metallic - 27704 2580 12844 gal.
f. Heavy metals Zn, Ni, Cr
g. $NaCl$, $Ni\ SO_4$ - 4320#
h. (NH_4Cl, KCl, NH_3 - 7000 gal.
4500# 2580#
i. SO_2 - Gauges
j. 420# cleaner, caustic 31,222#

2. a. On Site Waste Water Treatment [✓] Yes [ ] No

b. On Site Waste Water Treatment by July 1977 [✓] Yes [ ] No pending Buffalo Sewer

c. On Site Waste Water Treatment by July 1983 [ ] Yes [✓] No ?

d. Industrial Sewer Discharge [✓] Yes [ ] No Name of Sewage Treatment Plant Buffalo City

e. SPDES No. _____ NPDES No. _____

3. a. Air Pollution Control Devices [✓] Yes [ ] No Types fume scrubber -; paint spray filters

b. To Be Built [ ] Yes [ ] No by / /

c. Air 100 Emission Point Registration Numbers _____

4. a. Number of manufacturing employees 972 (750 mfg.) b. Manufacturing Floor Space _____ sq.ft. IND. ONLY.

5. Attach a plat or sketch of the facility showing the location of on-site process waste storage (if available).

6. Attach flow diagrams of chemical processes including waste flow outputs (if available).

7. In-house waste treatment capabilities: Reduce ($Cr^{+6} \rightarrow Cr^{+3}$) & SO_2 -; ~~filtration~~ ~~Lube Oil~~ some pH adjustment; centrifuge oil separator chips - oil filter, boiler - none.

8. Is there a currently used or abandoned landfill, dump or lagoon on plant property? [ ] Yes [✓] No

9. Industrial wastes produced or expected to be produced by plant.

1) Waste Cutting oils
2) Waste lubricating oils.
3) Sludge from plating treatment
4) Used Etchants } ~~neutralized and dumped to sewer~~ @ 6 mos. 50-60 gals.
5) Line cleaners }
6) Incinerator residue - No industrial waste incinerated
7) All Metal Recycled - ST ST, Cu, Inconel (Inkanell)
8) Paint Shavings from H2O Spray booth scrubber
9) HNO_3 from plating; 10) ~~Cyanides from plating~~

10. Comments: Future waste water treatment may be required, pending a Buffalo Sewer investigation of discharge.

Waste Characterization and Management Practice
(Use separate form for each waste stream)

1. Waste Stream No. 5 (from Form I, Number 17)

2. Description of process producing waste _____

3. Brief characterization of waste phosphorus acid (liquid)

4. Time period for which data are representative _____ to _____

5. a. Annual waste production 125,000 [✓] ~~tons~~ lbs/yr. [ ]gal./yr.

b. Daily waste production 500 [✓] ~~tons/yr.~~ lbs/day [ ]gal./yr.

c. Frequency of waste production: [ ]seasonal [ ]occasional [✓] ~~continual~~ continual

[ ]other (specify) _____

6. Waste Composition

a. Average percent solids ____ % b. pH range __ to __

c. Physical state: [✓]liquid, [ ]slurry, [ ]sludge, [ ]solid,

[ ]other (specify) _____

d. Component	Average Concentration	[ ]wet weight [ ]dry weight	
1. phosphorus acid		[ ]wt.%	[ ]ppm
2.		[ ]wt.%	[ ]ppm
3.		[ ]wt.%	[ ]ppm
4.		[ ]wt.%	[ ]ppm
5.		[ ]wt.%	[ ]ppm
6.		[ ]wt.%	[ ]ppm
7.		[ ]wt.%	[ ]ppm
8.		[ ]wt.%	[ ]ppm
9.		[ ]wt.%	[ ]ppm
10.		[ ]wt.%	[ ]ppm

see ✓ 1d page

e. Analysis of composition is / /theoretical / /laboratory /✓/estimate
(attach copy of laboratory analysis if available)

f. Projected / /increase, / /decrease in volume from base year: _____% by July 1977;

_____% by July 1983.

g. Hazardous properties of waste: / /flammable /✓/toxic / /reactive / /explosive

/ /corrosive / /other (specify) _____

7. On Site Storage

a. Method: / /drum, / /roll-off container, /✓/tank, / /lagoon, / /other (specify) _____

b. Typical length of time waste stored _____ / /days, / /weeks, / /months

c. Typical volume of waste stored _____ / /tons, / /gallons

d. Is storage site diked? / /Yes /✓/No underground tank

e. Surface drainage collection / /Yes /✓/No

8. Transportation

a. Waste hauled off site by / /you / /others

b. Name of waste hauler _____

Address _____
Street City

_____ ( )
State Zip Code Phone

9. Treatment and Disposal

a. Treatment or disposal: /✓/on site / /off site

b. Waste is / /reclaimed / /treated / /land disposed / /incinerated

/ /other (specify) roadways for summer dust control

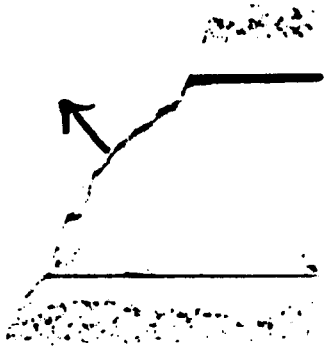
c. Off site facility receiving waste

Name of Facility _____

Facility Operator _____

Facility Location _____
Street City

_____ ( )
State Zip Code Phone



(Use separate form for each waste stream)

1. Waste Stream No. 1, 2, 4 (from Form I, Number 17) (b)

2. Description of process producing waste occasionally when there is an oil leak or spill in machine shops - sump will collect oil

3. Brief characterization of waste ~~dirt~~ mixture of oil, (cutting, lubricating) and H2O

4. Time period for which data are representative current - 1976 projection to

5. a. Annual waste production 4000 [ ] tons/yr. [x] gal./yr.

b. Daily waste production [ ] tons/day [ ] gal./day

c. Frequency of waste production: [ ] seasonal [x] occasional [ ] continual

[ ] other (specify) average 2 to 4 5 mos.

6. Waste Composition

a. Average percent solids ____ % b. pH range __ to __

c. Physical state: [ ] liquid, [ ] slurry, [ ] sludge, [ ] solid,

[ ] other (specify) ____

d. Component	Average Concentration	[ ] wet weight [ ] dry weight	
1. oil	30	[x] wt.%	[ ] ppm
2. water	70	[x] wt.%	[ ] ppm
3.		[ ] wt.%	[ ] ppm
4.		[ ] wt.%	[ ] ppm
5.		[ ] wt.%	[ ] ppm
6.		[ ] wt.%	[ ] ppm
7.		[ ] wt.%	[ ] ppm
8.		[ ] wt.%	[ ] ppm
9.		[ ] wt.%	[ ] ppm
10.		[ ] wt.%	[ ] ppm

f. Estimate: ___ increase, ___ decrease in volume from base year: ___% by 1977; ___% by 19

g. Hazardous properties of waste: [ ] flammable [✓] toxic [ ] reactive [ ] explosive
[ ] other (specify) ___

8. On Site Storage

a. Method: [✓] drum, [ ] roll-off container, [ ] tank, [ ] lagoon, [ ] other (specify) ___

b. Average length of time waste stored ___1___ [ ] days, [✓] weeks, [ ] months

c. Average volume of waste stored ___1500___ [ ] tons, [✓] gallons

d. Is storage site diked? [ ] Yes [✓] No

e. Surface drainage collection [ ] Yes [✓] No

9. Transportation

a. Waste hauled off site by [ ] you [✓] others

b. Name of waste hauler ___Frontier Chemical or Superior Pipe Co.___

Address ___168 [illegible] Ave___
Street ___[illegible], NY. 14219___ City / John [illegible]
State ___ Zip Code ___ Phone ( ) ___

c. Is above company registered with N.Y.S. to haul your waste? [ ] Yes [ ] No

10. Treatment and Disposal

a. Treatment or disposal: [ ] on site [X] off site

b. Waste is [ ] recycled [✓] treated [✓] land disposed [ ] incinerated
[ ] other (specify) ___either treated or land disposed or both.___

c. Complete Form III if company operates a land disposal facility. ✓

d. Off site facility receiving waste

Name of Facility ___

Facility Operator ___

Facility Location ___
Street ___ City ___
State ___ Zip Code ___ Phone ( ) ___

Waste Characterization and Management Practices
(Use separate form for each waste stream)

1. Waste Stream No. 3 (from Form I, Number 17)

2. Description of process producing waste Waste Water Treatment
precipitates heavy metals

3. Brief characterization of waste Multicolored heavy metal sludge
toothpaste consistency

4. Time period for which data are representative current to

5. a. Annual waste production ~~10,000 - 21,000~~ 10,000 - 12,000 / / tons/yr. /✓/ gal./yr. wide variance depends on how much plating done, could be more than

b. Daily waste production ____ / / tons/day / / gal./day

c. Frequency of waste production: / / seasonal / / occasional /✓/ continual 12,000 gal/yr

/ / other (specify) ____

6. Waste Composition

a. Average percent solids 5 % b. pH range __ to __ 12.0 / 10.5 / 12 / 6

c. Physical state: / / liquid, / / slurry, /✓/ sludge, / / solid,
/ / other (specify) ____

d. Component	Average Concentration	/ /wet weight / /dry weight
1. H_2O	95	/✓/ wt.% / / ppm
2. Ni, Cr, Fe, Zn, Cu, - OH's		/ / wt.% / / ppm
3. Soap		/ / wt.% / / ppm
4. $(Cr)_2(SO_4)_3$		/ / wt.% / / ppm
5.		/ / wt.% / / ppm
6.		/ / wt.% / / ppm
7.		/ / wt.% / / ppm
8.		/ / wt.% / / ppm
9.		/ / wt.% / / ppm
10.		/ / wt.% / / ppm

e. Analysis of composition is [ ] theoretical [ ] laboratory [ ] estimate
(attach copy of laboratory analysis if available)

f. Projected [ ] increase, [ ] decrease in volume from base year: _____, by July 1977; _____% by July 1983.

g. Hazardous properties of waste: [ ] flammable [✓] toxic [ ] reactive [ ] explosive [ ] corrosive [ ] other (specify) _____

7. On Site Storage

a. Method: [ ] drum, [ ] roll-off container, [ ] tank, [ ] lagoon, [✓] other (specify) free sludge holder

b. Typical length of time waste stored 6 [ ] days, [ ] weeks, [✓] months or more (waste - at treatment plant)

c. Typical volume of waste stored 10,800 [ ] tons, [✓] gallons

d. Is storage site diked? [ ] Yes [ ] No N.A.

e. Surface drainage collection [ ] Yes [ ] No

8. Transportation

a. Waste hauled off site by [ ] you [✓] others

b. Name of waste hauler Rural Sanitation Service # 15901

Address 5940 Hillcrest Drive Clarence (East of Chaktowa)
Street City

N.Y. ( ) 759-8391
State Zip Code Phone

9. Treatment and Disposal

a. Treatment or disposal: [ ] on site [✓] off site

b. Waste is [ ] reclaimed [✓] treated [ ] land disposed [ ] incinerated [ ] other (specify) sewage treatment plant

c. Off site facility receiving waste

Name of Facility _____

Facility Operator _____

Facility Location _____
Street City

_____ ( )
State Zip Code Phone

(Use separate form for each waste stream)

1. Waste Stream No. 8 (from Form I, Number 17)

2. Description of process producing waste Water Scrubber on paint spray booth

3. Brief characterization of waste paint ~~sludge~~ skimmings

4. Time period for which data are representative current to

5. a. Annual waste production 250 / / tons/yr. /✓/ gal./yr.

   b. Daily waste production 1 / / tons/day /✓/ gal./day

   c. Frequency of waste production: / / seasonal /✓/ occasional / / continual

   / / other (specify)

6. Waste Composition

   a. Average percent solids % b. pH range to

   c. Physical state: / / liquid, /✓/ slurry, / / sludge, / / solid,

   / / other (specify)

d. Component	Average Concentration	/ / wet weight / / dry weight	
1. Metallic paint		/ / wt.%	/ / ppm
2.		/ / wt.%	/ / ppm
3.		/ / wt.%	/ / ppm
4.		/ / wt.%	/ / ppm
5.		/ / wt.%	/ / ppm
6.		/ / wt.%	/ / ppm
7.		/ / wt.%	/ / ppm
8.		/ / wt.%	/ / ppm
9.		/ / wt.%	/ / ppm
10.		/ / wt.%	/ / ppm

250 gal
x 10 2500#

e. Analysis of composition is /_/theoretical /_/laboratory /_/[illegible]
(attach copy of laboratory analysis if available)

f. Projected /_/increase, /_/decrease in volume from base year: _____ by July 1977;
_____% by July 1983.

g. Hazardous properties of waste: /_/flammable /✓/toxic /_/reactive /_/explosive
/_/corrosive /_/other (specify) _____

7. On Site Storage

a. Method: /✓/drum, /_/roll-off container, /_/tank, /_/lagoon, /_/other (specify) bucket 5gal

b. Typical length of time waste stored 2 /_/days, /✓/weeks, /_/months

c. Typical volume of waste stored 10 /_/tons, /✓/gallons

d. Is storage site diked? /_/Yes /✓/No

e. Surface drainage collection /_/Yes /✓/No

8. Transportation

a. Waste hauled off site by /_/you /✓/others

b. Name of waste hauler Risen Refuse Service

Jack never heard of him

Address _____
Street City

_____ ( )
State Zip Code Phone

9. Treatment and Disposal

a. Treatment or disposal: /_/on site /_/off site

b. Waste is /_/reclaimed /_/treated /_/land disposed /_/incinerated
/_/other (specify) _____

c. Off site facility receiving waste

Name of Facility _____

Facility Operator _____

Facility Location _____
Street City

_____ ( )
State Zip Code Phone

Waste Characterization and Management Practices

(Use separate form for each waste stream)

1. Waste Stream No. 9 (from Form I, Number 17)

2. Description of process producing waste HNO_3 acid stripping; rinse water from plating operations

3. Brief characterization of waste Spent, contaminated acid etch 1-2% HNO_3; neutralized with soda (Na_2CO_3)

4. Time period for which data are representative current to

5. a. Annual waste production 500 [ ] tons/yr. [✓] gal./yr.

   b. Daily waste production [ ] tons/day [ ] gal./day ∓ 2,3 gal/5

   c. Frequency of waste production: [ ] seasonal [✓] occasional [ ] continual

   [ ] other (specify)

6. Waste Composition

   a. Average percent solids ___% b. pH range __ to __

   c. Physical state: [✓] liquid, [✓] slurry, [ ] sludge, [ ] solid,

   [ ] other (specify)

d. Component	Average Concentration	[ ] wet weight [ ] dry weight
1. HNO_3 1-2%	~	[ ] wt.% [ ] ppm
2. H_2O		[ ] wt.% [ ] ppm
3. Impurities including NO_3 salt		[ ] wt.% [ ] ppm
4.		[ ] wt.% [ ] ppm
5.		[ ] wt.% [ ] ppm
6.		[ ] wt.% [ ] ppm
7.		[ ] wt.% [ ] ppm
8.		[ ] wt.% [ ] ppm
9.		[ ] wt.% [ ] ppm
10.		[ ] wt.% [ ] ppm

f. Projected [ ] increase, [ ] decrease in volume from base year: _____ % by July 1977; _____ % by July 1983.

g. Hazardous properties of waste: [ ] flammable [ ] toxic [ ] reactive [ ] explosive [ ] corrosive [ ] other (specify) ?

8. On Site Storage

a. Method: [X] drum, [ ] roll-off container, [ ] tank, [ ] lagoon, [ ] other (specify) _____

b. Typical length of time waste stored _____ [ ] days, [ ] weeks, [ ] months

c. Typical volume of waste stored 100 [ ] tons, [X] gallons

d. Is storage site diked? [ ] Yes [X] No

e. Surface drainage collection [ ] Yes [X] No

9. Transportation

a. Waste hauled off site by [ ] you [X] others

b. Name of waste hauler - Frontier Chemical -

Address

Street _____ City _____

State _____ Zip Code _____ ( ) Phone _____

10. Treatment and Disposal

a. Treatment or disposal: [ ] on site [X] off site

b. Waste is [ ] reclaimed [ ] treated [ ] land disposed [ ] incinerated [ ] other (specify) _____

c. Off site facility receiving waste

Name of Facility _____

Facility Operator _____

Facility Location

Street _____ City _____

State _____ Zip Code _____ ( ) Phone _____

INTERAGENCY TASK FORCE ON HAZARDOUS WASTES
P.O. BOX 561
Niagara Falls, New York 14302
(716) 285-3057

September 26, 1978

Gentlemen/Ladies:

As you know, last month State Commissioner of Environmental Conservation, Peter A.A. Berle, announced the formation of an Interagency Task Force on Hazardous Wastes. He charged the Task Force with responsibility for determining the location and origins of all hazardous waste disposal sites in Erie and Niagara Counties. The Task Force, composed of representatives from the State Departments of Health and Environmental Conservation, and the Federal Environmental Protection Agency, recently bagan operations in Niagara Falls.

Based on the results of DEC's Industrial Waste Survey (1976-1977), the Task Force has identified your company as one of many in the Erie-Niagara area that are now generating significant amounts of industrial waste. As part of the Task Force effort to gain an understanding of general industrial waste disposal practices in Erie and Niagara Counties, a member of the Task Force will, in the near future, (a) send you a questionnaire requesting information about waste generation and disposal activities of your company between 1930 and 1975 and (b) telephone you to schedule a meeting to discuss such activities.

I am sure that you recognize that waste disposal in Erie and Niagara Counties is a matter of great public concern and trust that you will fully cooperate with us in our efforts to address that concern.

Very truly yours,

Peter J. Millock
Director
Interagency Task Force on Hazardous Wastes

PJM/pb

RECORD OF CONTACT

11:15
10-13-78
Date

Name of Contact: John Haynes
Address: J. H. William
Telephone: 875-3200
Affiliation:
Comments: Chief Engin : Tom Bogdanowicz

gave letter to

J.H. "Both out of town till this AM - John turned over to T.B. this AM" "If nec. T.B. will bring JH into problem"

Address good: 400 Vulcan - corner of Kenmore just down from Chev. Plant across from old Westinghouse plant

OK {2PM MONDAY ~~OCT 16~~

INTERAGENCY TASK FORCE ON HAZARDOUS WASTES
M.P.J. BOX 561
Niagara Falls, New York 14302
(716) 285-3057

October 13, 1978

Mr. Thomas Bogdanowicz
J.H. Williams
400 Vulcan Street
Buffalo, New York 14207

Dear Mr. Bogdanowicz:

This is to confirm our meeting on Monday, October 16, 1978 at 2:00 P.M. at your facility to discuss the Interagency Task Force questionnaire on Hazardous Wastes.

If any conflicts arise, please call me at 285-3057 and we will arrange another mutually convenient time.

Very truly yours,

Fredrik A. Muller

FAM/ksk

Fred:

10/14/74

Superior Pipe indicated that J H Williams, has a disposal site on their property for sand lime and other solids they remove from settling tanks.

9:55 AM

RECORD OF CONTACT

11-15-78
Date

Name of Contact: Tom Bagdanowicz

Address: J.F. Williams

Telephone: 875-3200

Affiliation:

Comments: Will be mailed out on Friday 11-17-78
Apparently the note from Josh Newman was
meant to be mailed last Friday ie the 17th

INTERAGENCY TASK FORCE ON HAZARDOUS WASTES
M.P.O. Box 561
Niagara Falls, New York 14302
(716) 285-3057

I. General Information

1. Company Name J.H. Williams Division of TRW, Inc.

Mailing Address 400 Vulcan Street (Street) Buffalo (City) New York (State) 14207 (Zip)

Present Plant Location [X] Same as Above

(Street) (City) (State) (Zip)

2. If Subsidiary or Division, Name of Parent Company TRW, Inc.

3. Person Responsible for Present Plant Operations
J.R. Haynes (Name)
Manager, Operations (716) 875-3200 Ext. 9 (Title) (Telephone)

4. Person Answering this Questionnaire
J.S. Newman (Name)
Supervisor Engineering (716) 875-3200 Ext. 38 (Title) (Telephone)

I. Company History

1. Date Company Founded - 1882 (Flushing, N.Y.)

Date and State of Incorporation July 1, 1895; New York State (Brooklyn)

Date Company Began Operations in Erie or Niagara County June 1, 1914

2. Other Company Names since 1930 (specify time periods) J.H. Williams & Co. 1930-1958
J.H. Williams & Co.; Div. of United Greenfield (1953-1968)

3. Other Plant Locations in Erie or Niagara County since 1930 (specify locations and time periods) None

4. Names of Companies Acquired which have Operated Plants in Erie or Niagara County since 1930 (specify name of company, date of acquisition, location of plant, and periods of operation). None

III. Company Personnel See Attached Sheets

1. Identify all plant managers from 1930 to present. Indicate years of service in that position, last known address and telephone number.

2. Identify all plant purchasing agents from 1930 to present. Indicate years of service in that position, last known address and telephone number.

3. Identify all plant personnel with supervisory responsibility for treatment or disposal of industrial wastes from 1930 to present. Indicate years of service, last known address and telephone number.

IV. Industrial Waste Production, Treatment and Disposal

1. Processes Used at Plant (1930-1975)

	Dates
a. Acid Pickling (Steel Forgings)	a. 1930-1975
b. Grinding (Steel Forgings)	b. 1930-1975
c. Plating (Steel Forgings)	c. 1930-1975
d. Heat Treating (Steel Forgings)	d. 1947-1975
e. Incineration (Wood Scraps, Paper)	e. 1930-1975

2. Products (1930-1975)

a. Spent Acid	a. 1930-1975
b. Alundum/Ferrous Dust	b. 1930-1975
c. Acid, Caustic, Chrome, Nickel, Cadmium, Zinc, Spent Cyanide Solution	c. 1930-1975
d. Chloride & Nitrate Salts, Cyanide Salts	d. 1947-1975
e. Wood and Paper Ash	e. 1930-1975

3. On Site Waste Treatment (1930-1975)

a.	a.
b. Collected by Bag House Filters	b. 1946-1975
c. Cr Reduction & Ph Adjustment; Cyanide Treatment with $NaHCLO_3$	c. 1972-1975
d.	d.
e.	e.

4. List all Waste Haulers since 1930 including Your Company

Name Frontier Chemical

Address 4626 Royal Avenue; (Street) Niagara Falls, (City) New York (State)

Telephone 693-3041

Name Rural Sanitation Service

Address 5040 Hillcrest Drive, (Street) Clarence (City) New York (State)

Telephone 759-8391

See Attached Sheet

III Company Personnel

1. Plant Managers

1916-1942	* J. Harvey Williams, President
1942-1952	* A.D. Armitage, President
1/15/52-1/1/54	Michael J. Kearins, President
1/1/54-1/28/54	* Konstantin Kronwall, President
1/28/54-12/31/60	J.C. Malugen, President P.O. Box 1052 Rancho Santa Fe, California 92067
1/1/61-8/31/65	J.S. Slosson, VP & General Manager 18 Twin Pines Road Sea Pines Plantation Hilton Head Island, S.C. 29928
9/1/65-9/27/74	H.N. Maurer, VP & General Manager 178 Meadowstream Drive Snyder, N.Y. 14226
10/1/74-Present	J.R. Haynes, Manager, Operations 400 Vulcan Street Buffalo, New York 14207

* Deceased

III Company Personnel

2. Plant Purchasing Agents

1930-1959	James P. O'Brien, Purchasing Agent
2/1/59 to Present	John T. Schaner, Purchasing Manager

III Company Personnel

3. Supervisory responsibility for Treatment/Disposal etc.

1972-Present	Charles Love	Power House Supervisor
1975-Present	C.R. Britton	Chief Metallurgist (Also Supervising Chem. Labs)
1955-1972	John Ross	Power House Supervisor
1954-1975	H.K. Jamesson	Chief Metallurgist (Also Supervising Chem. Labs)
1960-1963	C. Doll	Power House Supervisor
1955-1957	E. Jones	Plant Chemist
1945-1953	J. Over	Chief Metallurgist
1946	F. Hubbard	Maint. Engr. & Chief of Power House
1943-1946	W.A. Grace	Maint. Engr. & Chief of Power House

Note: Responsibilities for treatment, or disposal, are divided according to type of waste. Direct responsibility, regarding non-chemical wastes, is not certain prior to the seventies.

IV. 4. Waste Haulers, Con't.

Name: Booth Oil Co.
Address: 76 Robinson; North Tonawanda, N.Y.
Telephone: 693-0861

Name: I.N.S. (formerly Rosen Container)
Address: 4111 River Road; Tonawanda, N.Y.
Telephone: 875-7988

Name: Superior Pipecleaning Inc.
Address: 168 Woodlawn; Buffalo, New York
Telephone: 822-7500

November 20, 1978

Mr. J. Newman
Supervisor, Engineering
J.H. Williams Div. of TRW, Inc.
400 Vulcan Street
Buffalo, New York 14207

Dear Mr. Newman:

This is to acknowledge receipt of your completed questionnaire. I will be calling you soon to review any questions I may have about the information in the questionnaire.

Very truly yours,

Fredrik A. Muller

FAM/ksk

11-20-78 J. H. Williams

Cl

CN^- + ~~$NaHClO_3$~~ ?

NaOCl

{ chlorate ClO_3^- +5
{ perchlorate ClO_4^- +7

Strong oxidizing agents

cyanide ion is oxidized to NH_4^+ and $CO\uparrow$

$$HCN + H^+ + H_2O \rightarrow CO\uparrow + NH_4^+$$

but $CN^- + H^+ \rightarrow HCN\uparrow$ danger

$$CN^- + S \rightleftharpoons NCS^-$$

RECORD OF CONTACT

10:50 AM

11-22-78
Date

Name of Contact: Mrs. H. N. Maurer

Address:

Telephone: 839-1056 — no answer. Mrs. '65-'74

Affiliation:

Comments: 11-28-78 no answer.
12-1-78 no answer
sent letter 12-1-78

INTERVIEW COVER SHEET

Muller
Interviewer

Person Interviewed: John J. Slocum 11-22-78 9:30 AM call back Tues @ 12:30

Address: 803-671-4084

Telephone:

Referred By:

Date/Time of Interview: 12-1-78 @ 1:45 PM

Nature of Interview: Telephone: Office:

Field (specify): Several minute conversation:

Others Present:

"There was no disposal of solid wastes on the premises."

Present Affiliation:

Past Affiliation:

Principal Subject of Interview: "Never any problems with disposal of waste material."

Waste Generators Discussed: "Did use cyanide plating baths"

Disposal Sites Discussed:

Other Contacts Suggested:

Additional Action Appropriate:

Confidentiality: All: None: Some (specify)

INTERVIEW COVER SHEET

J. A. Muller
Interviewer

Person Interviewed: Josh Newman & Dick Klimecko

Address: J. H. Williams

Telephone:

Referred By:

Date/Time of Interview: Mon Oct 16, 1978 from approx 2:00 - 2:40 PM

Nature of Interview: Telephone: Office: ✓

Field (specify):

Others Present: none

Present Affiliation: J. H. Williams

Past Affiliation:

Principal Subject of Interview: General first interview - Supposed to be with chief Engr. Tom Bagdanowicz but he was sick - I answered their questions.

Waste Generators Discussed: Heavy metal sludge - nitric and

Disposal Sites Discussed: Waiting to hear from Buffalo Sewage Dept about their waste water

Other Contacts Suggested:

Additional Action Appropriate: Very cooperative and expect questionaire to be done on time.

Confidentiality: All: None: Some (specify)

RECORD OF CONTACT

2:45

12-1-28
Date

Name of Contact: Josh Newman & Dick K.

Address: J. H. Williams

Telephone: 875-3200 X38

Affiliation: S

Comments: TELCOM - Neither one could think of what Superior Pipe was referring to. Did not tell them source of info.

December 1, 1978

Mr. H.N. Maurer
178 Meadowstream Drive
Snyder, New York 14226

Dear Mr. Maurer:

I have enclosed a copy of an order by the New York State Commissioner of Environmental Conservation, Mr. Peter A.A. Berle stating our responsibility in Erie and Niagara Coutnies.

As a former General Manager of J.H. Williams Company from 1961 to 1965, could you advise us of any hazardous waste disposal practices at this plant? Specifically, were any acids, heat treating cyanides or dyanide plating solutions disposed of directly onto the plant grounds?

Of course, I am only interested in your recollection of any facts pertaining to the above and do not expect documentation.

Sincerely yours,

Fredrik A. Muller

FAM/ksk
Enclosure

178 Meadowstream Drive
Snyder, New York 14226
December 6, 1978

Interagency Task Force on Hazardous Wastes
M.P.O. Box 561
Niagara Falls, New York 14302

Attention: Mr. Fredrik A. Muller

Gentlemen:

This is in reference to your letter of December 1, 1978 in which you asked that I advise you concerning any hazardous waste disposal practices at the J. H. Williams plant in Buffalo.

To the best of my knowledge, during the years in which I was General Manager of J. H. Williams there were no acids, heat treating cyanides or cyanide plating solutions disposed of directly into the plant grounds.

Very truly yours,

H. N. Maurer

:ms

December 1, 1978

Mr. Josh S. Newman
Supervisor Engineering
J.H. Williams, Div. of TRW, Inc.
400 Vulcan Street
Buffalo, New York 14207

Dear Mr. Newman:

Another local company has "indicated that J.H. Williams has a disposal site on their property for sand lime and other solids they remove from settling tanks".

Can you please comment in writing on this matter.

Sincerely yours,

Fredrik A. Muller

FAM/ksk

TRW J. H. WILLIAMS DIVISION
TRW INC., 400 VULCAN STREET, BUFFALO, NEW YORK 14207
PHONE: 716/875-3200 • TWX: 710-522-1747 • TELEX 91-220

December 5, 1978

Interagency Task Force on Hazardous Wastes
M.P.O. Box 561
Niagara Falls, New York 14302

Attention: Mr. Fredrik Muller
Subject: Mr. Muller's letter of 12/1/78 re " Sand Lime" wastes

Gentlemen:

The material disposal to which you allude in the subject letter appears to be misunderstood by your informant.

We employ a common process known as "tumbling" to soften the sharp edges of our product. The procedure consists of rotating steel wrenches (product) in a large drum-like machine with a mixture of plain water, controlled amounts of Sodium Carbonate as an inhibitor, and commercially processesed "stones" of controlled size. The mild abrading action dulls sharp edges which result from metal removal machining. The application is quite universal in myriad industries. The tumbling media is supplied by the Gravi-Flow Company.

Over a length of time the stone media itself is eroded and reduced to a point of inefficiency. When dumping a tumbling barrel, to clean and replenish the media, we divert the water & remaining solids to a cistern-like covered tank. After settling to a clear state the water is pumped into the Buffalo sewer system. The remaining solution of liquid plus solids are handled by a contractor, Superior Pipe Cleaning Co., Woodlawn Ave., Woodlawn (Town of Hamburg).

The tank is flushed, emptied and drained on removal. On occasion, trace amounts of emulsified water-soluble oils maybe encountered but, not to a significant degree.

There is unsupported local belief that the discarded "stones" may have been used for bedding on-site concrete roadways in at least one instance. It is unrecorded and I am not familiar with it: however, I presume that if clean and of a size, the material could be used privately in lieu of gravel.

I trust this answers your request for comment on the subject matter.

Very truly yours,

Josh Newman

Josh Newman
Supervisor Engineering

JN:jlj

CC: T. Bogdanowicz
R. Klimecko

F. Ibrashi's File 12-14-78

J. H. Williams

5-12-78 One complaint in file

Heating fuel oil overflowed during transfer

14 – 55 gal drums recovered

J.H. W & Co have installed a proper overflow line so this will not happen again.

400-700 gal was absorbed in grad or went into sewer before it could be plugged.

INTERAGENCY TASK FORCE ON HAZARDOUS WASTES

Checklist

corner of Kenmore

Name of Company J. H. Williams, 400 Vulcan St., Buffalo, N.Y. 14207

Telephone Number 875-3200

Introductory Letter Sent (Mr. John Haynes General Mgr.)	✓	9-26-78 Date
Questionnaire Sent	✓	10-6-78
Initial Telephone Call (Tom Bogdanowicz Chief Engr.)	✓	10-13-78
Meeting Arranged	✓	2PM Oct 16 Monday
Appointment Confirmed in Writing	✓	10-13-78
DEC Hazardous Waste Questionnaire Read	✓	10-13-78
DEC Industrial Chemical Survey Print-out Read		
DEC File Reviewed	none found 11-8-78	
DEC Personnel Consulted		
County File Reviewed	✓	12-14-78
County Personnel Consulted		
Initial Meeting	✓	10-16-78 Josh Newman & Dick Klimecko
Completed Questionnaire Received	✓	11-17-78
Receipt of Questionnaire Acknowledged	✓	11-20-78
Questionnaire Reviewed	✓	11-22-78
Meeting on Questionnaire		
Interviews with Former Employees	✓	12-1-78 Slosson Ltr. to Maurer
Interviews with Present Employees		
Interviews with Other Persons		
Other Reports Consulted		
Summary Report Written		

Disposal Site Data Sheet

Name of Site: J.H. WILLIAMS

Location: 4100 VULCAN ST., BUFFALO, N.Y. 14207
(Attach map, if available)

Present Owner: SAME

Past Owner(s): SAME SINCE 1914

Size of Site in Acres:

Years Utilized as Disposal Site: SINCE BEGINNING TO PRESENT.

Nature and Quantities of Materials Disposed of at Site:

STONE DUST & METAL CHIPS FROM THE POLISHING PROCESS

Proximity to:

Flood Plain SEE MAP

Rivers and Streams NIAGARA RIVER 1/2 MILE AWAY

Wells

Homes CLOSE BY

Other Facilities

Visual Observations:

JAMES W. BERRY
DAVID W. OSGOOD
PHILIP A. St. JOHN
Department of Zoology, Butler University,
Indianapolis, Indiana

CHEMICAL VILLAINS
a biology of pollution

With 89 illustrations

Saint Louis
THE C. V. MOSBY COMPANY 1974

use available on-site cyanide destruction processes. Fortunately, there exist some effective techniques for removing cyanide compounds from industrial effluents.

Detoxification of cyanide involves rupturing the triple bond between the carbon and nitrogen atoms (C≡N). The most frequently used method is the alkaline chlorination process in which sodium hypochlorite (household bleach) is added directly to waste water, where it rapidly oxidizes the cyanides to less toxic cyanates. Cyanates, although less toxic than cyanides, are unacceptable wastes to some authorities and must be further converted to harmless carbon dioxide and ammonia by treatment with strong acid. New catalytic chemical processes have been developed and are being put into operation by some industries to meet stringent water quality regulations. Although these new processes employ slightly different chemical pathways, they ultimately detoxify cyanide by breaking it down into carbon dioxide and ammonia.

NaOCl

SUGGESTED READING

Aldrich, S. R.: Some effects of crop-production technology on environmental quality, Bioscience 22:90-95, 1972.

Eisenbud, M., and Ehrlich, L. R.: Carbon monoxide concentration trends in urban atmospheres, Science 176:193-194, 1972.

Heller, A., and Ferrand, E.: Low sulfur fuels for New York City. In Hart, J., and Socolow, R., editors: Patient earth, New York, 1971, Holt, Rinehart & Winston, Inc.

Jaffee, L. S.: The biological effects of photochemical air pollutants on man and animals, American Journal of Public Health 57:1269-1277, 1967.

Keeney, D. R.: The fate of nitrogen in aquatic ecosystems, Madison, Wis., Jan., 1972, University of Wisconsin Water Resources Center.

Kellogg, W. W., and others: The sulfur cycle, Science 175:587-596, 1972.

Maugh, T. H.: Carbon monoxide: Natural sources dwarf man's output, Science 177:338-339, 1972.

Plass, G. N.: Carbon dioxide and climate, Scientific American 20(1):41-47, 1959.

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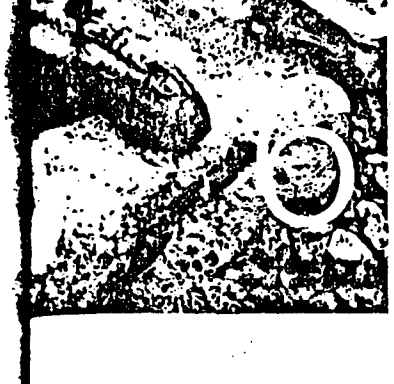
$CN^- \xrightarrow{NaOCl} [NCO]^-$

$:\ddot{N}=C=\ddot{O}:^-$ cyanate ion

not

$:\ddot{C}=N=\ddot{O}:^-$ fulminate ion



INDUS
ORGA

This chapter will be concerned with
of natural and man-made organic com
have proved troublesome in the envir
chemist defines *organic* compounds a
contain carbon in their structure. In
chapter several simple carbon compoun
sidered. Those to be examined in this c
of a more complicated structure, contai
many carbon atoms per molecule. Th
because of their particular importanc
spread use, will be treated separately i
With the exception of oil, all of the com
discussed are man made. In the case of
tion hydrocarbons some of the compoun
from natural forest fires, but quantitative
are man generated are more importa
thread of chemical continuity that runs
chapter is the presence of carbon in the
all of the molecules taken up. Similarly,
the various organic molecules on living
almost as varied as the materials themse
each section of this chapter can be
largely independent of the others. In m
mechanisms through which the organ
produce their effects on organisms re
obscure. That these mechanisms are
understood as those of the elemental
pollutants is not surprising in view of
nature of the reactions of these lar
Toxicologists are only beginning to
reactions, but the day will come when

to "safe" levels of air pollutants? Does air pollution have the same effects during the lifetime of a laboratory animal (3 to 4 years) as it does on humans with a life-span of 75 years?

Still unanswered is the question of synergistic effects of pollutants. That is, are the combined effects of several pollutants added or are they multiplied? Compound A by itself may be considered safe, and compound B by itself may be considered safe, but when compounds A and B are present together, they may interact and produce a much different effect than either produced separately. In most laboratory studies so far only the effects of one or two materials have been investigated at a time (e.g., SO_2 and NO_2 or CO and SO_2). Compared to individual pollutants, studies of synergistic effects of several pollutants are more difficult to conduct and much more costly, and they are even harder to interpret.

In short, it will be a long time before there are answers to some of the most important questions about the effects of various air pollutants on living things.

CYANIDE

Almost everyone is aware that cyanide is a poison. Most people have heard of it as the "active ingredient" in gas chamber executions. What most people do not realize is that cyanide is a common water pollutant. Small quantities of cyanide do occur naturally, such as that produced by millipedes as a defense mechanism against their predators. However, all of the cyanide in industrial use today is commercially synthesized. Cyanide consists of carbon and nitrogen atoms joined by a triple bond (C≡N) to form the cyanide radical. Compounds containing the cyanide radical (e.g., sodium cyanide, hydrogen cyanide) form a class of versatile reagents with many chemical and industrial applications. These chemicals enter industrial waste streams from a variety of chemical processing industries such as extraction of gold and silver ores, synthetics manufacturing, coal-coking furnaces, and electroplating of gold, silver, zinc, cadmium, and other metals.

Mechanism of action. Classed as a respiratory inhibitor, cyanide severely reduces cell respiration by binding irreversibly to the iron group of cytochrome $a+a_3$, an enzyme complex necessary for the final energy step of the electron transfer system in mitochondria (Chapter 2). Fig. 5-11 shows the point of cyanide blockage. Cyanide binding of cytochrome $a+a_3$ reduces the oxygen intake of cells immediately, and this effect is particularly damaging to nerve cells. Symptoms of cyanide poisoning are rather extreme: first the nervous system is excited, then paralyzed; the pupils are constricted, then dilated; simultaneously respiration is increased, then abruptly halted. Since cyanide binds irreversibly, extremely low concentrations can prove fatal to any living organism; for example, concentrations greater than 0.1 ppm of cyanide in water can kill fish.

Control of cyanide pollution. Because cyanide concentrations as low as 0.3 ppm are toxic to bacteria in activated sludge, municipal sewage treatment facilities often place strict regulations on the cyanide content of effluents entering sewer systems. Industries using cyanide for processing are thus required to

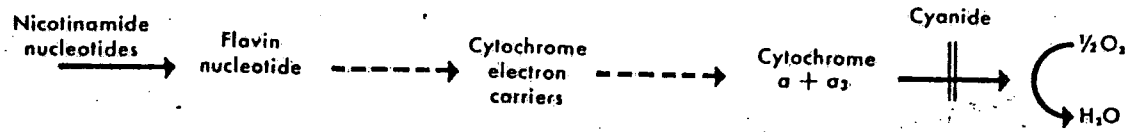


Fig. 5-11. Electron transfer system in mitochondria, showing where cyanide inhibits the reaction. For further information on the electron transfer system see Chapter 2.

CHRISTOFELL JKC

TRW J. H. WILLIAMS DIVISION

June 7, 1982

Department of Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202

Attention: Mr. Tom Christofell

Gentlemen:

We are returning the affidavit authorizing you to proceed with soil sample drilling on our plant property. You will note that several changes have been made to the original document relating to our access to soil samples and data relating to the tests.

At the present time business conditions have necessitated changes in our normal plant operating schedules and additional revisions may be forthcoming. In view of this situation, we would appreciate at least two weeks advance notice of the testing date so that the necessary arrangements can be made.

Sincerely yours,

F. A. Wenske

Franklin A. Wenske
Facilities Engineer

FAW:bes
Enclosure

cc: Mr. Paul A. Dines
Mr. Edwin L. Comstock

J.H. WILLIAMS DIVISION OF TRW INC.,
400 VULCAN ST., BUFFALO, NEW YORK 14207
TEL 716/875-3200 • TELEX 91220

SYNS:
CYANSAN SAN-CYAN

TOXICITY DATA: 3 CODEN:
orl-hmn TDLo:5400 mg/kg/24W:EYE AROPAW 94,927,76
ims-rat LD50:310 mg/kg BJPCAL 1,186,46
orl-mus LDLo:4 mg/kg APFRAD 19,740,61

Reported in EPA TSCA Inventory, 1980.

THR: Toxic to eye in hmn via orl. HIGH ims, orl. See also cyanates.

Disaster Hazard: When heated to decomp it emits very tox fumes of CN^- and Na_2O.

CYANIDE

CAS RN: 57125 NIOSH #: GS 7175000
mf: CN^-; mw: 26.02

SYN: CYANURE (FRENCH)

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:3 mg/kg NATUAS 228,1315,70

TLV: Air: 5 mg/m3 DTLVS* 4,109,80. *Toxicology Review:* CLCHAU 19,361,73. "NIOSH Manual of Analytical Methods" VOL 1 116, VOL 3 S250. Reported in EPA TSCA Inventory, 1980.

THR: Cyanide directly stimulates the chemoreceptors of the carotid and aortic bodies with a resultant hyperpnea. Cardiac irregularities are often noted, but the heart invariably outlasts the respirations. Death is due to respiratory arrest of central origin. It can occur within seconds or minutes of the inhalation of high concentrations of hydrogen cyanide gas. Because of slower absorption, death may be more delayed after the ingestion of cyanide salts, but the critical events still occur within the first hour.

Two other sources of cyanide have been responsible for human poisoning. One of these is amygdalin, a cyanogenic glycoside found in apricot, peach, and similar fruit pits and in sweet almonds. Amygdalin is a chemical combination of glucose, benzaldehyde, and cyanide from which the latter can be released by the action of β-glucosidase or emulsin. Although these enzymes are not found in mammalian tissues, the human intestinal microflora appears to possess these or similar enzymes capable of effecting cyanide release resulting in human poisoning. For this reason amygdalin may be as much as 40 times more toxic by the oral route as compared with intravenous injection. Amygdalin is the major ingredient of Laetrile, and this alleged anticancer drug has also been responsible for human cyanide poisoning. An ethical drug that may also cause cyanide poisoning in overdose is the potent vascular smooth muscle relaxant sodium nitroprusside. Although nitroprusside is related chemically to ferricyanide, unlike the latter it penetrates into erythrocytes and reacts with hemoglobin to release its cyanide (Smith and Kruszyna, 1974). Fortunately, the therapeutic margin for nitroprusside appears to be quite large.

Cyanide is commonly found in certain rat and pest poisons, silver and metal polishes, photographic solutions, and fumigating products. Compounds such as potassium cyanide can also be readily purchased from chemical stores. Cyanide is readily absorbed from all routes, including the skin, mu mem, and by inhal, although alkali salts of cyanide are toxic only when ingested. Death may occur with ingestion of even small amounts of sodium or potassium cyanide and can occur within minutes or hours depending on route of exposure. Inhalation of toxic fumes represents a potentially rapidly fatal type of exposure. Sodium nitroprusside (Smith and Kruszyna, 1974) and apricot seeds (Sayre and Kaymakcalan, 1964) have also caused cyanide poisoning. A blood cyanide level of greater than 0.2 μg/ml is considered toxic. Lethal cases have usually had levels above 1 μg/ml. Clinically, cyanide poisoning is reported to produce a bitter, almond odor on the breath of the patient; however, only a small proportion of the population is genetically able to discern this characteristic odor. Typically, cyanide has a bitter, burning taste, and following poisoning, symptoms of salivation, nausea without vomiting, anxiety, confusion, vertigo, giddiness, lower jaw stiffness, convulsions, opisthotonos, paralysis, coma, cardiac arrhythmias, and transient respiratory stimulation followed by respiratory failure may occur. Bradycardia is a common finding, but in most cases heartbeat usually outlasts respiration (Wexler et al., 1947). A prolonged expiratory phase is considered to be characteristic of cyanide poisoning.* The volatile cyanides resemble hydrocyanic acid physiologically, inhibiting tissue oxidation and causing death through asphyxia. Cyanogen is probably as toxic as hydrocyanic acid; the nitriles are generally considered somewhat less toxic, probably because of their lower volatility. The non-volatile cyanide salts appear to be relatively non-toxic systemically, so long as they are not ingested and care is taken to prevent the formation of hydrocyanic acid. Workers, such as electroplaters and picklers, who are daily exposed to cyanide solutions may develop a "cyanide" rash, characterized by itching, and by macular, papular, and vesicular eruptions. Frequently there is secondary infection. Exposure to small amounts of cyanide compounds over long periods of time is reported to cause loss of appetite, headache, weakness, nausea, dizziness, and symptoms of irr of the upper respiratory tract and eyes. See also specific compounds.

Fire Hazard: Mod, by chemical reaction with heat, moisture, acid. Many cyanides evolve hydrocyanic acid rather easily. This is a flam gas and is highly toxic. Carbon dioxide from the air is sufficiently acidic to liberate hydrocyanic acid from cyanide solutions. See also hydrocyanic acid.

Explosion Hazard: See hydrocyanic acid. Explodes if melted with nitrite or chlorate @ about 450°. Violent reaction with F_2, Mg, nitrates, HNO_3, nitrites.

Disaster Hazard: Dangerous; on contact with acid, acid

* Casarett and Doull's,"Toxicology, the basic Science of Poisons" 2nd ed. Doull, Klaassen and Amdur (eds). Macmillan Pub. Co. Inc. New York, N.Y.

fumes, water or steam, they will produce toxic and flam vapors.

CYANIDOL

NIOSH #: LK 9820000

mf: $C_{15}H_{11}O_6$; mw: 287.26

SYN: 3,3',4',5,7-PENTAHYDROXYFLAVYLIUM ACID ANION

TOXICITY DATA:	3-2	CODEN:
ipr-rat LD50:2350 mg/kg		CHTPBA 2,33,67
ivn-rat LD50:240 mg/kg		CHTPBA 2,33,67
ipr-mus LD50:4110 mg/kg		CHTPBA 2,33,67
ivn-mus LD50:840 mg/kg		CHTPBA 2,33,67

THR: HIGH ivn. MOD ivn, ipr.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

CYANINE DYE 715

CAS RN: 548845
NIOSH #: VC 3542500
mf: $C_{26}H_{28}N_3 \cdot Cl$; mw: 418.02

SYN: 6-DIMETHYLAMINO-2-(2-(2,5-DIMETHYL-1-PHENYL)3-PYRROLYL)VINYL)-1-METHYLQUINOLINIUM), CHLORIDE

TOXICITY DATA:	3	CODEN:
orl-rat LD50:161 mg/kg		JPETAB 107,315,53
orl-mus LD50:7900 ug/kg		JPETAB 107,315,53

THR: HIGH orl.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and Cl^-.

2-CYANOACETAMIDE

CAS RN: 107915
NIOSH #: AB 5950000
mf: $C_3H_4N_2O$; mw: 84.09

White powder; mp: 119°; bp: decomp.

SYNS:
CYANACETAMIDE
CYANOACETAMIDE
CYANOIMINOACETIC ACID
MALONAMIDE NITRILE
MALONAMONITRILE
NITRILOMALONAMIDE
USAF KF-14

TOXICITY DATA:	2	CODEN:
orl-mus LD50:1680 mg/kg		KHZDAN 9,50,66
ipr-mus LD50:750 mg/kg		NTIS** AD691-490

Reported in EPA TSCA Inventory, 1980.
THR: MOD orl, ipr. See also nitriles.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and CN^-.

CYANOACETIC ACID

CAS RN: 372098
NIOSH #: AG 3675000
mf: $C_3H_3NO_2$; mw: 85.07

Solid; mp: 66°; bp: 108° @ 15 mm.

SYNS:
ACIDE CYANACETIQUE (FRENCH)
CYANESSIGSAEURE (GERMAN)
MALONIC MONONITRILE
MONOCYANOACETIC ACID
USAF KF-17

TOXICITY DATA:	3-2	CODEN:
orl-rat LD50:1500 mg/kg		LONZA# 12JAN81
ipr-mus LD50:200 mg/kg		NTIS** AD691-490
scu-rbt LDLo:2000 mg/kg		AIPTAK 5,161,1899
scu-frg LDLo:2000 mg/kg		AIPTAK 5,161,1899

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: HIGH ipr; MOD orl, scu. See also nitriles. Reacts violently with furfuryl alcohol.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and CN^-.

N-CYANOACETYL ETHYL CARBAMATE

CAS RN: 6629045
NIOSH #: EZ 3480000
mf: $C_6H_8N_2O_3$; mw: 156.16

TOXICITY DATA:	3	CODEN:
ipr-mus TDLo:2400 mg/kg/4W-I:NEO		CNREA8 29,2184,69

THR: An exper NEO. See also carbamates and cyanides.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

1-CYANO-3-tert-AMYLGUANIDINE

CAS RN: 1113106
NIOSH #: MF 0175000
mf: $C_7H_{14}N_4$; mw: 154.25

SYNS:
1-CYANO-3,6-PENTYLGUANIDINE
GUANCIDINE

TOXICITY DATA:	3-2	CODEN:
orl-rat LD50:300 mg/kg		JPETAB 161,88,68
ipr-rat LD50:313 mg/kg		JPETAB 161,88,68
orl-mus LD50:1400 mg/kg		JPETAB 161,88,68
ipr-mus LD50:322 mg/kg		JPETAB 161,88,68

THR: HIGH orl, ipr. MOD orl.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and CN^-.

p-CYANOBENZALDEHYDE

CAS RN: 105077
NIOSH #: CU 5250000
mf: C_8H_5NO; mw: 131.14

SYNS:
4-CYANOBENZALDEHYDE
P-CYANOBENZENECARBOXALDEHYDE
P-FORMYLBENZONITRILE
4-FORMYLBENZONITRILE
TEREPHTHALALDEHYDONITRILE
USAF KF-1

TOXICITY DATA:	3	CODEN:
ipr-mus LD50:100 mg/kg		NTIS** AD277-689

Reported in EPA TSCA Inventory, 1980.
THR: HIGH ipr. See also nitriles and aldehydes.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

10-CYANO-1,2-BENZANTHRACENE

CAS RN: 7476086
NIOSH #: CW 1050000
mf: $C_{19}H_{11}N$; mw: 253.31